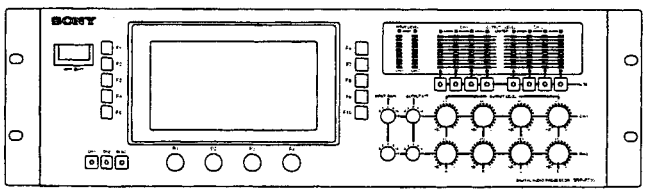
SONY

2-344-632-11 (1

Digital Audio Processor

SRP-F700

Instruction Manual



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THANK YOU FOR PURCHASING A SONY SRP-F700 DIGITAL AUDIO PROCESSOR.

Before beginning use, read this manual carefully.

Be sure to keep it properly for future reference.

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WARNING

Notice for the Customers in the United Kingdom

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue : Neutral

Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows: The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black. The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red. Do not connect either wire to the earth terminal in the plug which is marked by the letter E or by the safety earth symbol Y or coloured green or green-and-yellow.

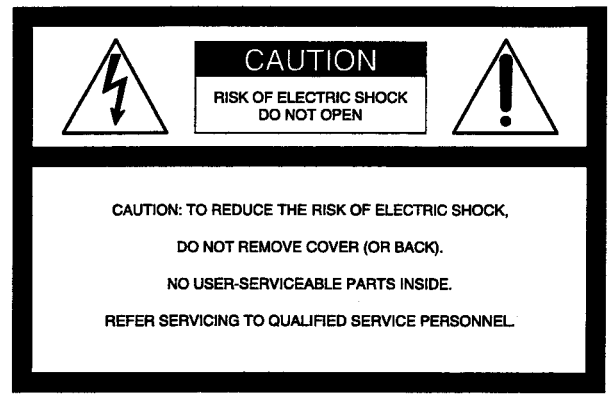
Afin d'écarter tout risque d'électrocution, garder le coffret fermé. Ne confier l'entretien de l'appareil qu'à un personnel qualifié.

Per evitare scosse elettriche, non aprire l'apparecchio. Per le riparazioni rivolgersi solo a personale qualificato.

Para evitar descargas eléctricas, no abra la caja. En caso de avería, solicite los servicios de personal cualificado solamente.

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

*The location of the marking is on the top enclosure.

PRECAUTIONS

On safety (Refer to the supplied "WARNING".)

- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

On installation

- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- When mounting the unit on the EIA 19-inch standard rack, allow enough space of 1U or more above this unit for good ventilation.

On operation

- Before making program source connections, be sure to turn the power switch off and unplug the unit.
- When the unit is not used, turn the power off to conserve energy and to extend the useful life of your unit.

On cleaning the cabinet

Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

On repacking

Do not throw away the carton and the packing material. It makes an ideal container for transporting the unit.
When shipping the unit for repair work or to another location, repack it as it was.

If you have any questions or problems concerning your unit, consult your nearest Sony dealer.

1. OUTLINE

The SRP-F700 digital audio processor is designed for use with various acoustic systems installed in concert halls, multi-purpose halls, banquet rooms, etc.
The device incorporates two channels of 1-input/4-output processing systems to process stereo signals alone.

Built-in 20-bit, 96 kHz sampling A/D and D/A converter

The A/D and a D/A converter with 96 kHz sampling frequency and 20-bit quantization incorporated produce quality sounds faithfully from original sounds.

High-speed digital signal processing

Twenty high-speed DSPs by 52-bit internal computation corresponding to 96 kHz sampling are mounted (at standard). Double- and quadruple-precision computation is applied in the critical parts of the digital signal processing unit of the device to enhance computation accuracy. This is one of the major features of the device for ensuring high sound quality.
The digital signal processing unit incorporates all the functions required for sound field control, including graphic equalizer, parametric equalizer, notch filter, delay, crossover network filter, limiter/compressor, and phase switcher.
Five modes, each with a different combination of processing (algorithm), are available. The user can choose the most suitable one for sound field control according to the actual conditions of use.

Microcomputer controlled analog sound volume control

A 0 to –20 dB analog sound volume control is provided for each of the eight outputs. The sound volume controls are located in the analog signal unit after D/A converter so that no sound deterioration results from bit loss, which occurs when the level is controlled in the digital signal process.
The position (angle) of the eight sound volume controls are individually controlled by a microcomputer. The sound volume can be set by the instructions from the microcomputer via motor drive. The sound volume control position can be stored and recalled by the program store function described later.

Up to 100 programs can be stored

A maximum of 20 parameter setting conditions (programs) can be stored in each of the five modes. The user can recall the optimum program according to the conditions of use.

Easy to operate

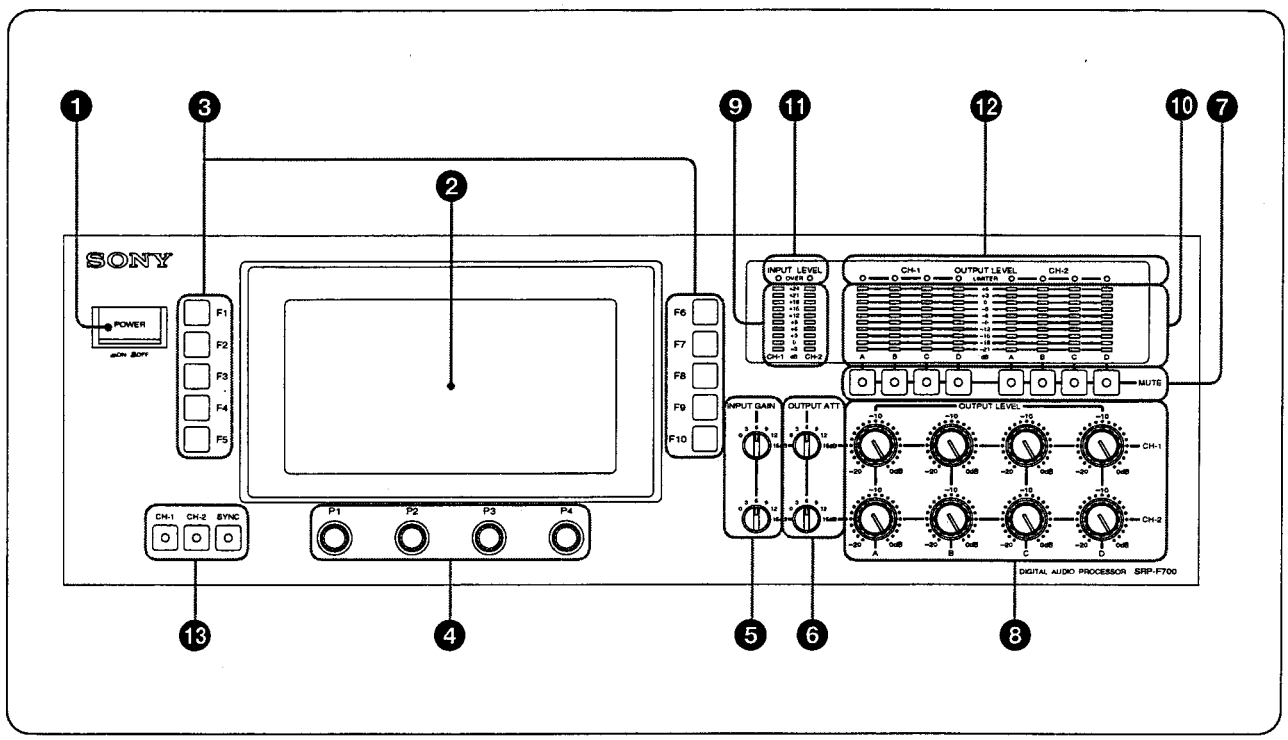
With digital equipment, it is generally difficult to change parameters, and complicated procedures are involved. The SRP-F700 device simplifies the parameter setting procedure with 10 function keys, four parameter knobs and a large-sized liquid crystal display. To set the parametric equalizer, for example, three parameters of frequency, Q, and level are controlled by respective knobs just like in an analog system.
The characteristics are graphically shown on the large-sized liquid crystal display on a real time basis as the user changes the parameters. The user can thus set the sound field while listening to the sound and watching the change of the sound on the graph on the display.

External control terminal provided

The user can recall programs stored in the memory using MIDI and parallel remote terminals. In addition to recalling programs, the user can remotely control and change the parameters by connecting a personal computer via the RS-422A terminal (control via the RS-422A terminal is an optional specification).

2. CONTROLS AND FUNCTIONS

2-1. Front Panel



❶ POWER Switch

The internal condition is stored in the memory for approximately six months when the power is turned OFF. When the user turns the device ON, the previous condition returns automatically (unless the user changes the MODE switch on the rear panel).

❷ Liquid Crystal Display (LCD)

The user can set the parameters while watching the LCD.

The backlight can be turned OFF. The contrast is adjustable.

Refer to page 45 for the description of the system menu.

The functions of function keys ❸ and parameter knobs ❹, described in the following paragraphs, are always displayed at the edge of the LCD.

❸ Function Keys (F1 to F10)

The function keys are used to select a menu, select the parameter setting channels, etc.

The function of F1 to F10 keys will vary with the menu displayed on the LCD screen. When the menu on the display is changed, the function of the function keys also changes. The function of a function key is described at the edge of the LCD close to the relevant key. See individual menu screens for details.

Any key without a display is ineffective. There will be no response when pressed.

❹ Parameter Knobs (P1 to P4)

Parameter knobs are mainly used for inputting parameter values.

Like the function keys, parameter knobs have a different function depending on what menu is currently shown on the LCD screen. The current function is displayed on the LCD screen close to respective knobs. See individual menu screens for details. Any knob without a display is ineffective. There will be no response when turned.

(In the main menu screen, for example, a message reads "DIGITAL AUDIO PROCESSOR SRP-F700" on the lower part of the LCD and the parameter knobs are ineffective.)

❺ INPUT GAIN Knobs (CH-1, CH-2)

The INPUT GAIN knob is used to adjust the gain of the input signals from the input terminals at the front stage of the internal A/D converter. The gain is adjustable in steps of 3 dB up to 15 dB at the maximum.

The adjustment with this knob is directly related to the available head room within the device.

When the input signals are continuously low, the head room in the A/D converter may be set as small as possible so that the bit loss at the A/D converter is reduced, and, accordingly, the actual resolution is enhanced. For this reason, it is recommended that the gain be adjusted according to the level of the input signals. The user can adjust the gain while checking the level with the INPUT level meter ❿ and the OVER indicator. For how to adjust the knobs, refer to page 9.

❻ OUTPUT ATT (attenuator) Knobs (CH-1, CH-2)

The OUTPUT ATT knob allows the user to attenuate the level of the output signals after D/A conversion by a maximum of 15 dB in steps of 3 dB. The input and output level of the device will be 1:1 when the position of the INPUT GAIN knob ❺ is matched to the position of the OUTPUT ATT knob.

❼ Output Mute Switches (CH-1A, CH-1B, CH-1C, CH-1D, CH-2A, CH-2B, CH-2C, CH-2D)

The Output Mute switches are used to select ON/OFF for the mute of the output channels.

The state in which the LED (green) of the key lights up indicates the mute of the output.

The status of the eight switches is stored and recalled as a program parameter. It is automatically set when the program is recalled.

❽ Output Level Knobs (CH-1A, CH-1B, CH-1C, CH-1D, CH-2A, CH-2B, CH-2C, CH-2D)

These are the knobs for the level adjust dials for the output channels. They can be attenuated from 0 dB to a maximum of -20 dB, allowing, allowing the level balance to be adjusted up to a maximum of 20 dB between the output channels relatively.

The status of the eight knobs is stored and recalled as a program parameter. It is automatically set by the motor drive when the program is recalled.

❾ INPUT Level Meters (CH-1, CH-2)

The display range of the input signal level meter is from -3 dBs to +24 dBs.

The displayed level is equal to the signal level of the input terminal plus input gains determined by the INPUT GAIN knob ❸. The +24 dBs corresponds to the maximum input level (for the A/D converter).

❿ OUTPUT Level Meters (CH-1A, CH-1B, CH-1C, CH-1D, CH-2A, CH-2B, CH-2C, CH-2D)

The display range of the output signal level meter is from -21 dBs to +6 dBs.

The level of signals output from the output terminals on the rear panel is displayed. (The level reflects the setting of OUTPUT ATT knobs ❻, Output Mute switches ❼, and Output Level knobs ❽.)

The display range of the output level meter is lower than that of the input level meter because the level of signals is reduced when they pass the crossover filter.

⓫ Input OVER Indicators (CH-1, CH-2) (red)

The Input OVER indicators will light up when the level of input signals to the A/D converter is increased and the waveform clips. Decrease the input level when the indicator lights up continuously.

⓬ Limiter Indicators (CH-1A, CH-1B, CH-1C, CH-1D, CH-2A, CH-2B, CH-2C, CH-2D) (orange)

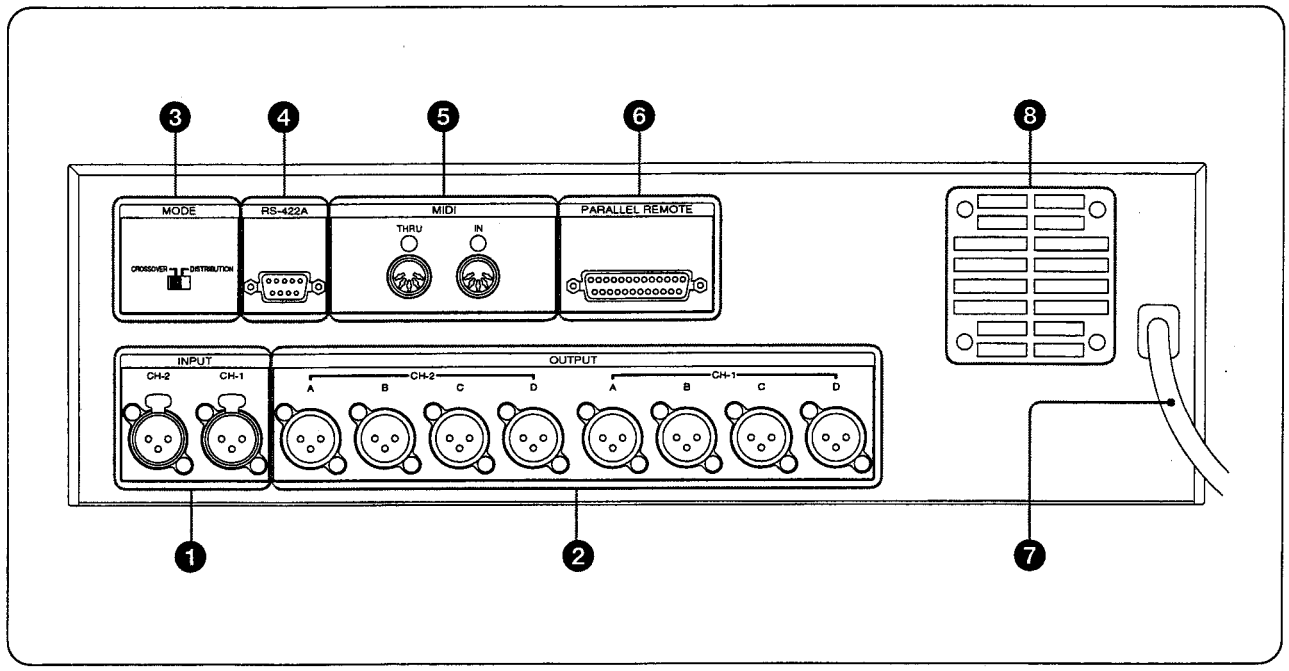
These are the limiter/compressor blocks for processing digital signals at each channel. They light up when the limiter/compressor operates with the signals exceeding the preset threshold values.

⓭ CH-1/CH-2/SYNC Keys

The SRP-F700 device incorporates two processing channels (stereo), each comprising one input and four outputs.

These three keys are used to set signal processing parameters for CH-1 and CH-2 respectively, or to set the same parameters for both. Refer to page 19 for details.

2-2. REAR PANEL



❶ INPUT Terminals (CH-1, CH-2)

Connected to the output of a mixer, etc. The terminal is XLR-3-31 or equivalent.
Electronic balancer circuit (1:GND, 2:HOT, 3:COLD).

❷ OUTPUT Terminals (CH-1A, CH-1B, CH-1C, CH-1D, CH-2A, CH-2B, CH-2C, CH-2D)

The final signal, after signal processing and D/A conversion, is output. The terminal is XLR-3-32 or equivalent.
Electronic balancer circuit (1:GND, 2:HOT, 3:COLD).

❸ MODE Selector Switch

The MODE selector switch is used to select between crossover and distribution mode, which are the basic distinction of the signal processing algorithms (modes).
The SRP-F700 device operates in the mode which has been selected when power is turned on. The mode will not change even if the Mode selector switch is changed (unless you turn ON the power again).
Refer to page 13 for mode switching.

❹ RS-422A Terminal for External Control (D-sub 9-Pin)

The device may be externally controlled when this terminal is connected to the RS-422A terminal of a personal computer (optional specification).

❺ MIDI Terminal for External Control

MIDI signals are input from external equipment when the device is connected with commercially available MIDI cables.
Programs can be recalled with MIDI signals. Refer to page 46 for details.

❻ PARALLEL REMOTE Terminal for External Control (D-sub 25-pin)

Programs are recalled with a simple switch using this terminal. Refer to page 47 for details.

❼ Power Cord

Connect the Power cord to a 230 VAC outlet.

❽ Air Cooling Fan Ventilation

Warm air is exhausted from here when the device is used. Be sure not to cover up this opening.

3. ON ADJUSTMENT OF INPUT GAIN AND OUTPUT ATT

The INPUT GAIN knob is used to adjust the level in the analog portion before the A/D converter. The OUTPUT ATT knob is used to adjust the level in the analog portion after the D/A converter. They are not interlocked with the mode and programs described later. With these knobs, the user can adjust the relation between the level of the sound signals input to the SRP-F700, head room of the SRP-F700, and the output level of the device when it is connected to other equipment.

3-1. INPUT GAIN Knob, INPUT Level Meter, and OVER Indicator

- For digital audio equipment in general, the head margin in the digital range is related to the actual resolution of digital sound signals. The smaller the head room, the fewer the bits wasted in a finite bit length.
  Accordingly, the sound quality is improved when the head room of the signals input to the A/D converter is set at the lowest possible level to the extent that the full scale is not exceeded at the maximum input and there is no clip in the digital signal processing.

- To produce a good sound quality, the SRP-F700 device has an INPUT GAIN knob for adjusting the head room for the signals input to the A/D converter at the input stage. With this knob, the user can adjust the gain of the input signals on the front stage of the A/D converter. The user can adjust the INPUT GAIN while checking the head room with the INPUT level meter and the OVER indicator on the panel.

- The maximum value of the input level meter, +24 dBs, is the maximum input level of the SRP-F700 device. This level meter does not indicate the level of the signals input to the SRP-F700, but indicates the level plus the input gain determined by the INPUT GAIN knob ❸. For example, when the input level is +6 dBs, and INPUT GAIN knob is set to 3, the level meter indicates 9 dB (= 6 dBs + 3 dB). The head room in this instance is 15 dB (= +24 -9).

- The level meter can not follow up peak signals but can confirm the clip of peak waves with the OVER indicator. The OVER indicator indicates that the input signal peak has clipped, exceeding the maximum input level of the D/A converter.
  It is necessary to decrease the input level when the OVER indicator lights up continuously.

3-2. OUTPUT ATT Knob and OUTPUT Level Meter

- The device has an OUTPUT attenuation knob corresponding to the INPUT GAIN adjustment.
  When the gain of the input signals is adjusted with the INPUT GAIN knob, all the succeeding output signals will also have a gain. To prevent this, the OUTPUT ATT knob is set at the same position as the INPUT GAIN so that the output is attenuated by the same GAIN quantity used in the input portion. By this, the relation between the input and output level of the device is kept at 1:1.
  This knob is not necessarily used in combination with the INPUT GAIN knob. It may also be used to adjust the output level.

- The OUTPUT level meter indicates the level of the signals that have passed the OUTPUT attenuation and OUTPUT level.

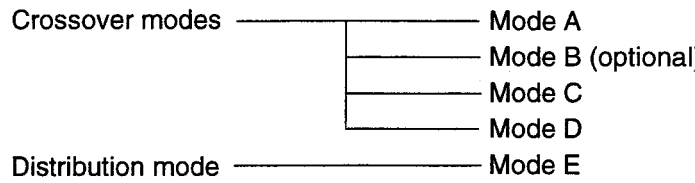
4. SELECTING MODE

The first step to set the SRP-F700 for operation is selecting the operation mode (signal processing algorithm). After selecting the mode, the parameters are set (refer to page 17 and after).
This section describes the signal processing algorithm used in each mode, and the mode selecting procedure.

4-1. On Operation Mode

The SRP-F700 device has five modes, each with a unique algorithm for processing digital signals. One mode should be selected for use.

The five modes are grouped into two categories of crossover and distribution modes as shown below.



Crossover Mode (Modes A to D)

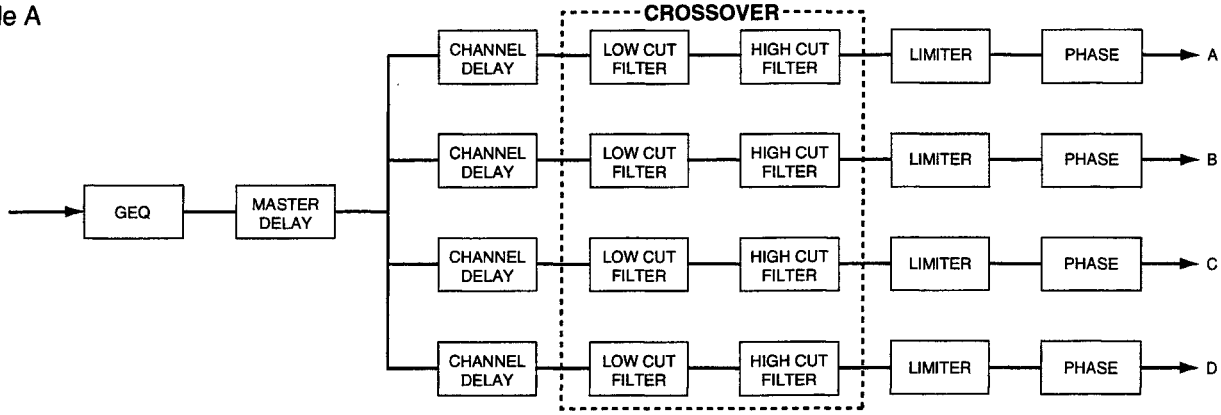
Each crossover mode contains a unique algorithm for the crossover which is used in multi-amplifier speaker systems.
Each of the crossover modes A to D has a unique way of processing with the equalizer and crossover filter. One out of the four modes is selected according to the speaker system to be used.
(Mode B is only available with the device provided with the optional DSP board. Refer to page 57 and the instruction manual for the optional kit SRP-70BK for details.)

Distribution Mode (Mode E)

The input signals are distributed to a maximum of four systems. The equalizer, delay and limiter processing is effected for each output independently.

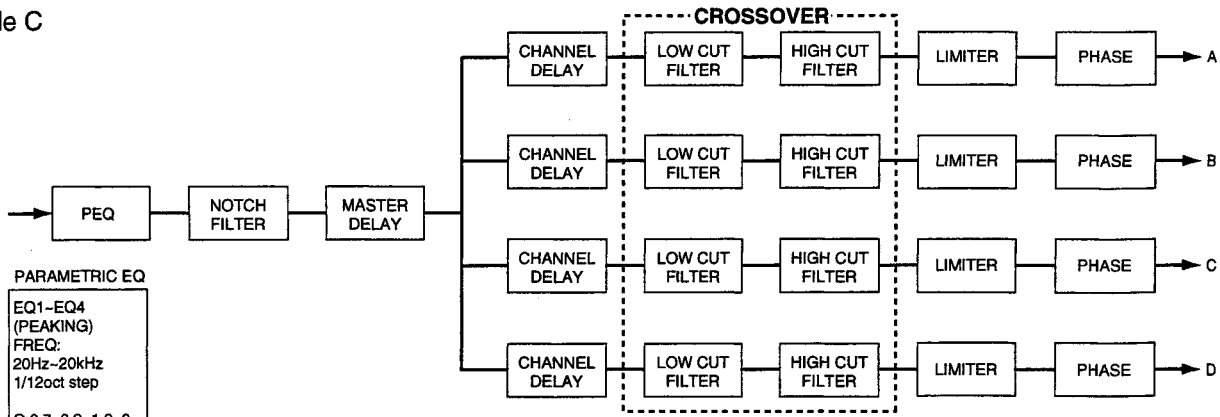
Signal processing algorithms in each mode are described below.

Mode A



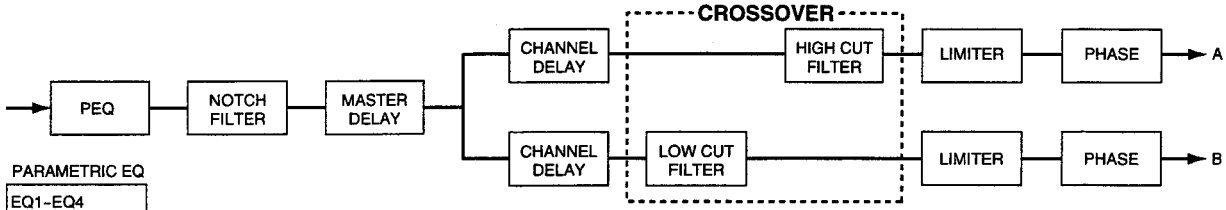
GRAPHIC EQ	MASTER DELAY	CHANNEL DELAY	CROSSOVER: LOW CUT FILTER	CROSSOVER: HIGH CUT FILTER	LIMITER	PHASE
FREQ: 20Hz~20kHz 31 Band (1/3 oct) Q:3, 4.5, 7 LEVEL: ±12 dB (0.5 step)	DELAY TIME: 0~1000msec 1msec step	DELAY TIME: 0~30msec 10.4µsec step	FREQ: OFF, 20Hz~18kHz 1/6oct step TYPE: Butterworth –12dB/oct –18dB/oct –24dB/oct Bessel –12dB/oct –18dB/oct –24dB/oct Linkwitz-Riley –12dB/oct –24dB/oct	FREQ: 22.4Hz~20kHz, OFF 1/6oct step TYPE: Butterworth –12dB/oct –18dB/oct –24dB/oct Bessel –12dB/oct –18dB/oct –24dB/oct Linkwitz-Riley –12dB/oct –24dB/oct	ATTACK: 0.5, 1, 2.5, 10, 20, 50, 100, 200 msec THRESHOLD: +24~–6dB 2dB step RATIO: 2:1, 4:1, 10:1, :1 RELEASE: 100~1000msec 100msec step	NORMAL/REVERSE

Mode C



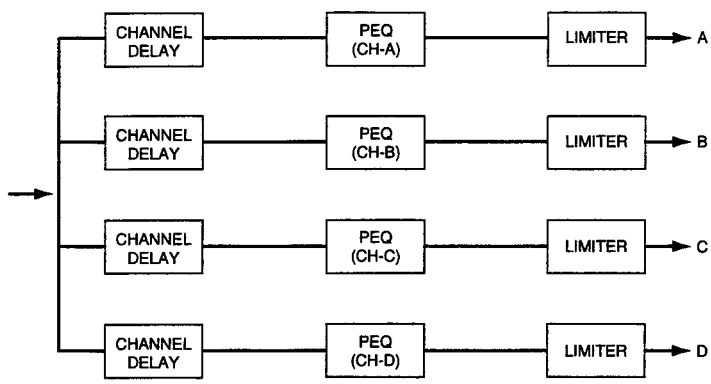
PARAMETRIC EQ	NOTCH FILTER	MASTER DELAY	CHANNEL DELAY	CROSSOVER: LOW CUT FILTER	CROSSOVER: HIGH CUT FILTER	LIMITER	PHASE
EQ1~EQ4 (PEAKING) FREQ: 20Hz~20kHz 1/12oct step Q:0.7, 0.9, 1.2, 3, 4.5, 7 LEVEL: 0~±12dB 0.5dB step LOW SHELVING FREQ:20Hz~1kHz 1/3oct step LEVEL: 0~±12dB 0.5dB step HIGH SHELVING FREQ: 1.25kHz~16kHz 1/3oct step LEVEL: 0~±12dB 0.5dB step	No.1~No.12 FREQ: 20Hz~20kHz 1/12oct step LEVEL: 0~–12dB 3dB step	DELAY TIME: 0~1000msec 1msec step	DELAY TIME: 0~30msec 10.4µsec step	FREQ: 400Hz~18kHz 1/6oct step TYPE: Butterworth –12dB/oct –18dB/oct –24dB/oct Bessel –12dB/oct –18dB/oct –24dB/oct Linkwitz-Riley –12dB/oct –24dB/oct	FREQ: 22.4Hz~20kHz, OFF 1/6oct step TYPE: Butterworth –12dB/oct –18dB/oct –24dB/oct Bessel –12dB/oct –18dB/oct –24dB/oct Linkwitz-Riley –12dB/oct –24dB/oct	ATTACK: 0.5, 1, 2.5, 10, 20, 50, 100, 200 msec THRESHOLD: +24~–6dB 2dB step RATIO: 2:1, 4:1, 10:1, ∞:1 RELEASE: 100~1000msec 100msec step	NORMAL/REVERSE

Mode D



PARAMETRIC EQ	NOTCH FILTER	MASTER DELAY	CHANNEL DELAY	CROSSOVER: LOW CUT FILTER	CROSSOVER: HIGH CUT FILTER	LIMITER	PHASE
EQ1–EQ4 (PEAKING) FREQ: 20Hz–20kHz 1/12oct step Q:0.7, 0.9, 1.2, 3, 4.5, 7 LEVEL: 0–±12dB 0.5dB step	No.1–No.12 FREQ: 20Hz–20kHz 1/12oct step LEVEL: 0––12dB 3dB step	DELAY TIME: 0–1000msec 1msec step	DELAY TIME: 0–30msec 10.4µsec step	FREQ: OFF, 20Hz–18kHz 1/6oct step (TYPE: FIR –24dB/oct)	FREQ: 400Hz–18kHz 1/6oct step (TYPE: FIR –24dB/oct)	ATTACK: 0.5, 1, 2.5, 10, 20, 50, 100, 200 msec THRESHOLD: +24–—6dB 2dB step RATIO: 2:1, 4:1, 10:1, ∞:1 RELEASE: 100–1000msec 100msec step	NORMAL/REVERSE
LOW SHELVING FREQ:20Hz–1kHz 1/3oct step LEVEL: 0–±12dB 0.5dB step							
HIGH SHELVING FREQ: 1.25kHz–16kHz 1/3oct step LEVEL: 0–±12dB 0.5dB step							

Mode E



CHANNEL DELAY	PARAMETRIC EQ		LIMITER
DELAY TIME: 0–1000msec 1msec step	EQ1–EQ4 (PEAKING) FREQ: 20Hz–20kHz 1/12oct step Q:0.7, 0.9, 1.2, 3, 4.5, 7 LEVEL: 0–±12dB	LOW SHELVING FREQ:20Hz–1kHz 1/3oct step LEVEL: 0–±12dB 0.5dB step	ATTACK: 0.5, 1, 2.5, 10, 20, 50, 100, 200 msec THRESHOLD: +24–—6dB 2dB step RATIO: 2:1, 4:1, 10:1, ∞:1 RELEASE: 100–1000msec 100msec step
		HIGH SHELVING FREQ: 1.25kHz–16kHz 1/3oct step LEVEL: 0–±12dB 0.5dB step	

4-2. Selecting the Mode

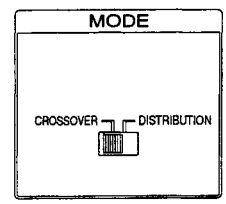
A mode is selected in two steps.

Selecting crossover or distribution mode

First decide whether to use the SRP-F700 as a crossover or a distribution device in the procedure below.

Before turning Power switch ON, set the slide switch on the rear panel to either CROSSOVER or DISTRIBUTION. Turn Power switch ON. The equipment will operate in the selected mode when Power switch is turned ON. The mode can not be changed to the other even if the switch setting is changed (unless the power is turned ON again).

Rear Panel

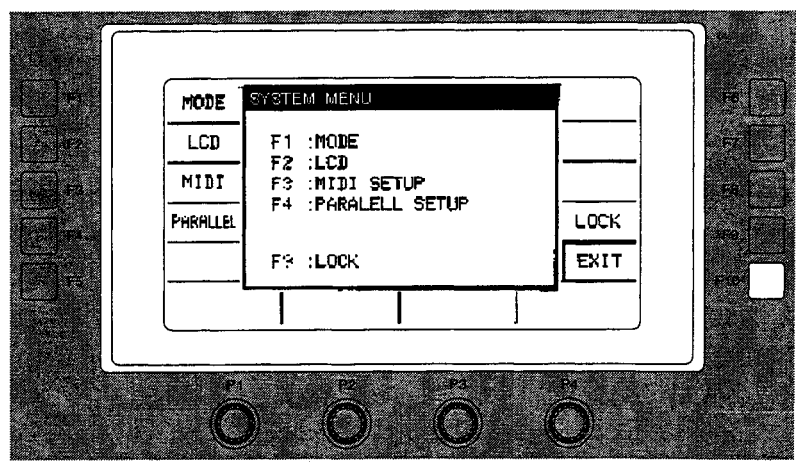


If the distribution mode was selected, it means that the device will be used in mode E.
If the crossover mode was selected, select one out of the four modes A to D as follows.

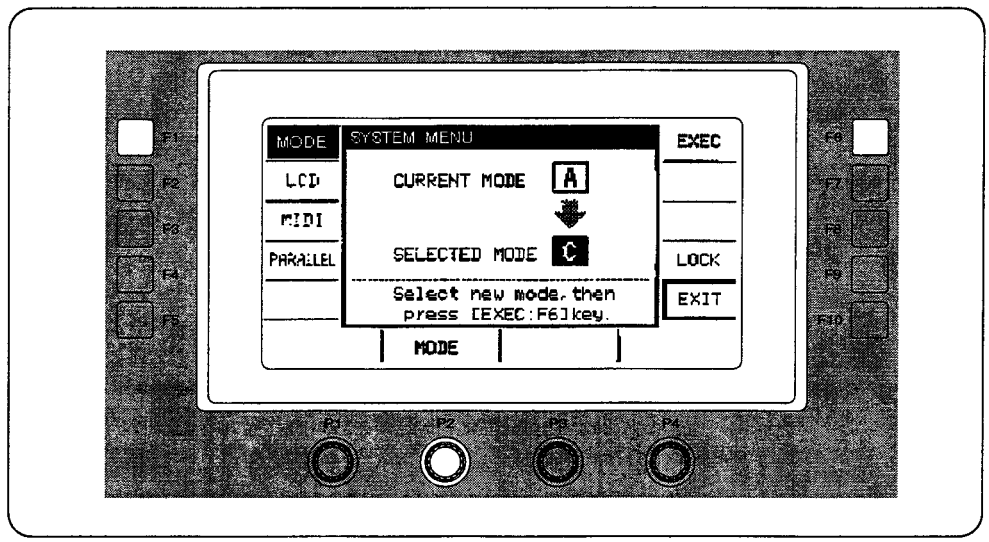
Switching among the crossover modes

When using the device in the crossover mode, the mode can be selected from modes A to D. Immediately after the mode is changed from the distribution to the crossover mode and the power is turned ON, the mode select menu described paragraph 2 below will be displayed.

1 Press SYSTEM (F10) key on the main menu to display the system menu.



2 Press MODE (F1) key to display the mode select menu.



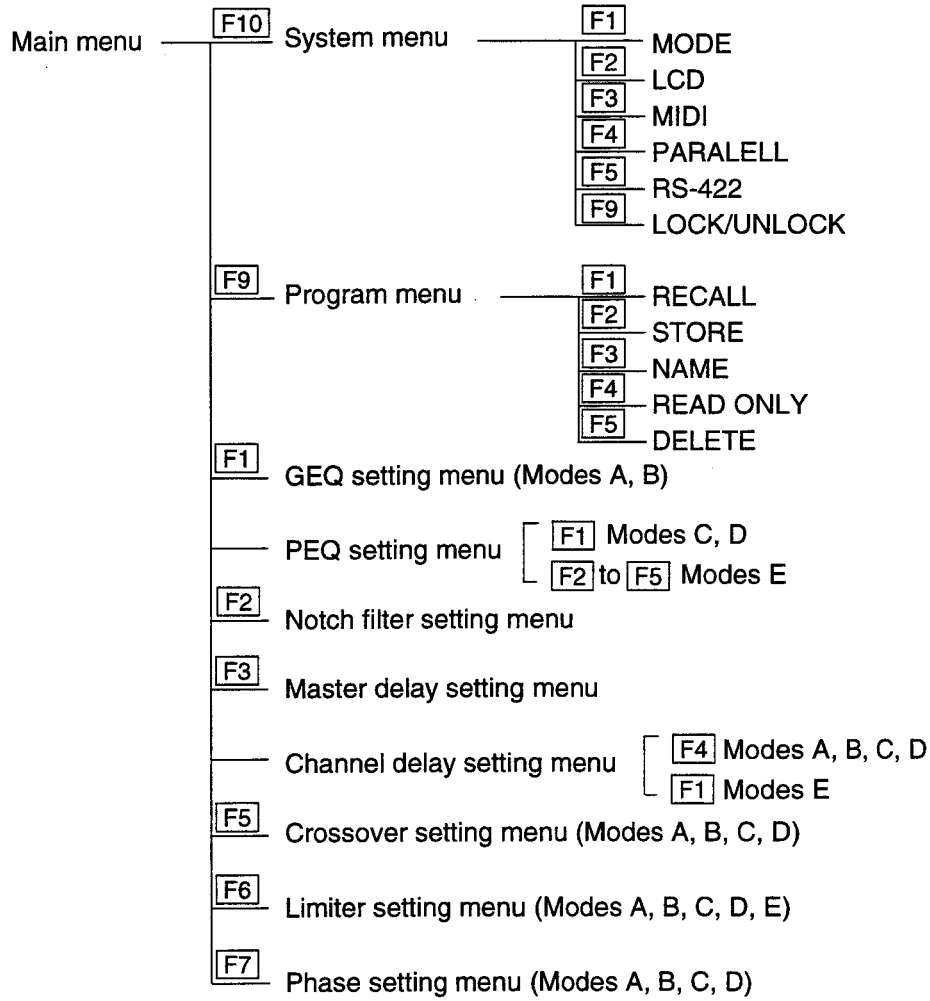
3 Select the desired mode with the parameter knob (P2), and press EXEC (F6) key to set the selection.

Reference

- When the mode is switched in the above procedure, the programs, if any, stored for that mode will be displayed on the screen for your selection.
- When no programs are stored for the newly selected mode, the internal initial program will be used. A confirmation message, "You'll use preset parameter. (Press [F6])," will be displayed on the LCD. Press the EXEC (F6) key once again.

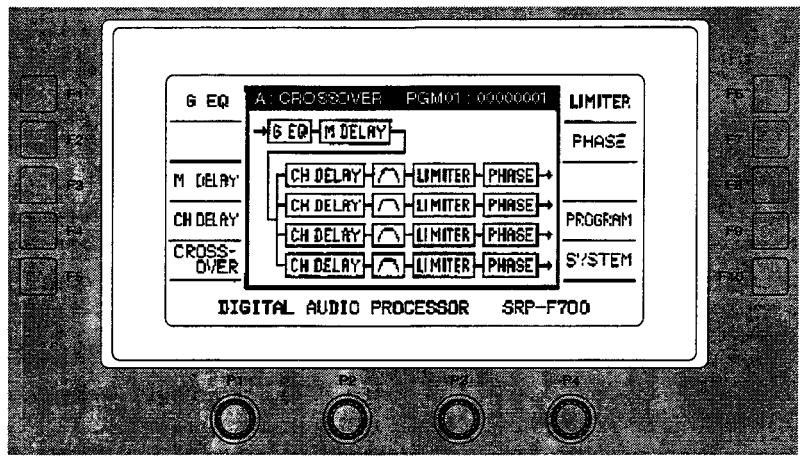
5. OPERATION MENU

The following menus are available for setting various parameters.



5-1. Main Menu

The following LCD screen state is called the main menu (screen).



- The middle window displays the mode, program number, and program name currently used at the very top. (For details of the program, refer to page 36.)
  The window shows the signal processing algorithm of the mode used.

- Parameters other than MUTE and output level can not be set at the main menu.
  Pressing the F1 to F10 function keys of the main menu will display the **parameter setting menu** for each processing block for parameter to be set.
  For details of the parameter setting menu, refer to pages 17 to 19.

- To store, recall a program, etc., press the PROGRAM (F9) key to display the **program menu** (common to all modes).
  For details of the program menu, refer to page 36.

- Pressing the SYSTEM (F10) key will display the **system menu** for the SRP-F700.
  This is used to set items other than those related to program setting such as changing the mode, adjusting the LCD brightness and contrast, setting external control, etc. (common to all modes).
  For details of the system menu, refer to page 44.

Reference

Parameter settings set in relation to signal processing is called "PROGRAM". This means that when the SRP-F700 is used, it is operated by a certain program in a certain mode. Up to 20 programs can be stored in the unit by mode and are recalled later. For details on storing and recalling programs, refer to page 38.

5-2. Parameter Setting Menu

Parameter setting menus can be set from the main menu to perform settings at the following menus.

Types of parameter setting menus

- GEQ setting menu (Modes A) ..... See page 20.
- PEQ setting menu (Modes C, D, E) ..... See page 21.
- Notch filter setting menu (Modes C, D) ..... See page 24.
- Master delay setting menu (Modes A, B, C, D) ..... See page 25.
- Channel delay setting menu (Modes A, B, C, D)/(Modes E) ..... See page 26, 27.
- Crossover setting menu (Modes A, B, C)/(Modes D) ..... See page 28, 32.
- Limiter setting menu (Common to all menus) ..... See page 33.
- Phase setting menu (Modes A, B, C, D) ..... See page 34.
- MUTE setting (Regardless of the mode) ..... See page 35.
- OUTPUT level adjustment (Regardless of the mode) ..... See page 35.

5-3. CH-1/CH-2/SYNC Functions in Parameter Settings (All modes)

The SRP-F700 has 2 channels (stereo) of 1 IN/4 OUT signal processing functions. Using the 3 keys-CH-1/CH-2/SYNC, the processing of CH-1 or CH-2 can be made the same or changed.

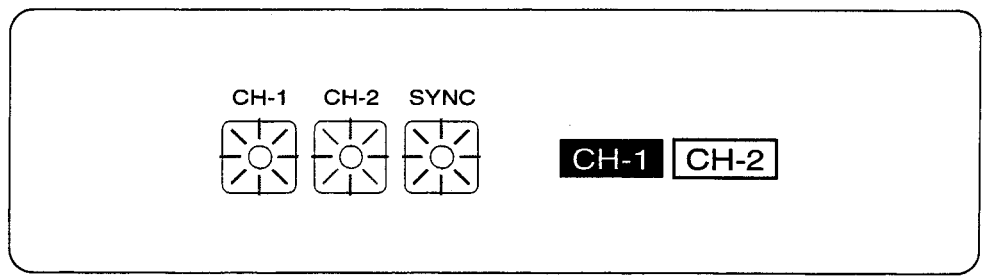
NOTE

CH-1, CH-2, and SYNC keys can be used when a certain parameter setting menu is displayed. These will not function at the main menu.

SYNC setting (All CH-1, CH-2, and SYNC LEDs are lit.)

The SYNC setting will set (change) all parameters of CH-1 and CH-2 at a time by controlling a parameter setting operation once.

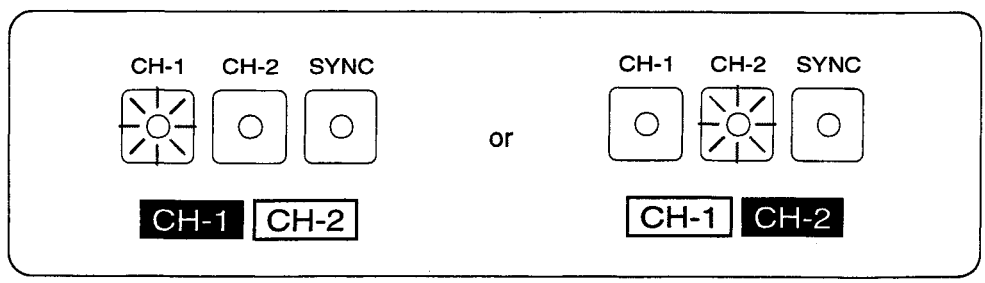
The LED of the key will be lit, and both CH-1 and CH-2 will be high-lighted at the parameter setting screen.



Individual CH setting (Either CH-1 or CH-2 LED is lit, and SYNC LED is OFF.)

It is possible to set (change) only the CH-1 (CH-2) parameter.

When the CH-1 (CH-2) key is pressed, only the CH-1 (CH-2) key LED will light up, and the parameter setting of that channel will be displayed. Parameters displayed on the LCD screen indicate the channel value being set. The channel being set will be highlighted on the screen.



NOTE

When switched to the individual CH setting, all parameters of all blocks in that program will be set for each channel.

Individual CH setting from SYNC setting

When switched to the individual CH setting after SYNC setting by pressing the CH key, either CH can be changed according to the SYNC setting state.

NOTE

When switched to the individual CH setting, after this, all parameters of all blocks in that program will be set for each channel.

It is recommended that the common settings for CH-1 and CH-2 be set by the SYNC setting, followed by other settings for each channel by individual CH setting.

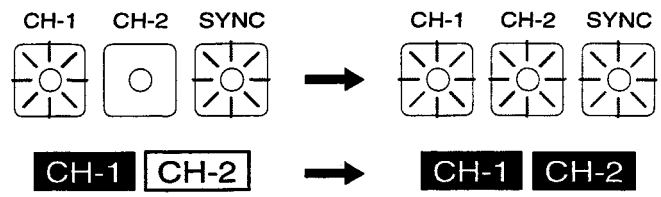
Returning to the SYNC state from the individual CH setting state.

When there is no need to set the individual CH setting, the SYNC setting can be set as follows.

1 To define the current CH-1 setting, press the CH-1 key to set the CH-1 state. (Press the CH-2 key in the case of CH-2.)

2 Press the SYNC key once. The LED of the selected channel (CH-1 or CH-2) will light up. The SYNC key LED will blink for confirmation.

3 Press the SYNC key for more than two seconds. The parameters will be copied, and all parameters of CH-1 or CH-2 will be set to the same values.
All CH-1, CH-2, and SYNC key LEDs will light up and the SYNC state will be set.



(In this example, all parameters of CH-1 are copied to CH-2, and the SYNC state will be set.)

Reference

When keys other than the SYNC key is pressed while the SYNC key LED is blinking, the operation to switch to SYNC will be canceled.

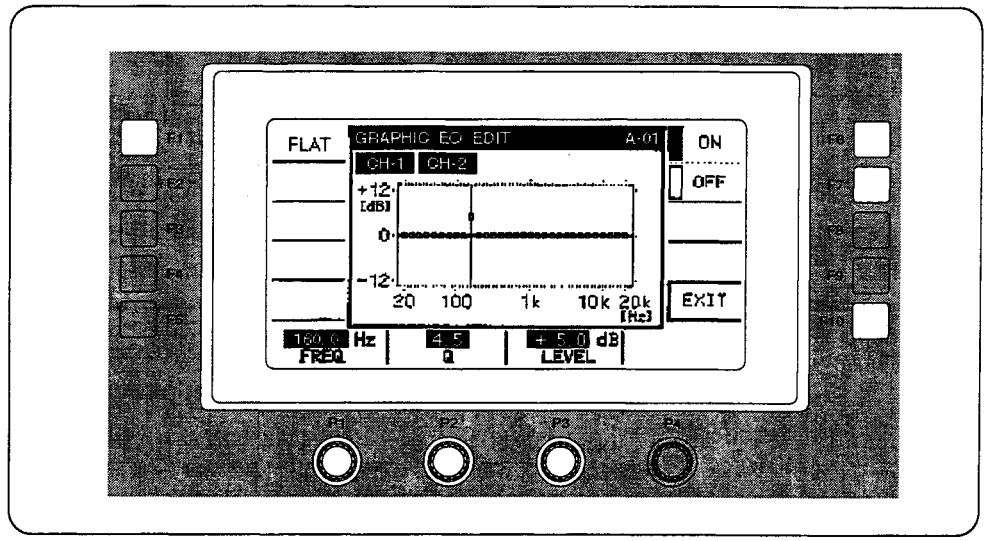
If SYNC is not pressed for 10 seconds after blinking starts, the operation to switch to SYNC will be canceled.

5-4. Graphic Equalizer (GEQ) Setting Menu (Mode A)

Used for setting 1/3 oct step, 31 bands graphic equalizer.
By mounting the optional SRP-70BK, mode B (121 bands) can be used.

Functions of parameter setting knobs

FREQ (P1) : Selects a frequency ; 20 Hz to 20 kHz 1/3 oct steps, 31 bands
Q (P2) : Sets Q ; 3, 4.5, 7 (mode A)
LEVEL (P3) : Sets a level ; ±12 dB, 0.5 dB steps



- Rotate the FREQ (P1) and select the frequency point to set the level. The frequency being selected will be displayed in the parameter function display area, and a vertical line will be displayed on the middle graph.
- Set the frequency level selected with FREQ (P1) using LEVEL (P3).
- Select the 31 bands Q comprising GEQ using Q (P2). The larger Q is, the narrower the frequency band width to be boosted (or cut) in each band. Q is not only set for the band selected with FREQ (P1), but for all 31 bands at a time.

Other key functions

FLAT (F1)

Pressing the FLAT key for more than 2 seconds will return all bands to 0 dB.

ON/OFF (F6/F7)

The ON/OFF (F6/F7) keys are used to set the GEQ function ON/OFF.
When ON (F6) is pressed, the GEQ function being set operates.
When OFF (F7) is pressed, the signal will pass through the processing block without the GEQ function operating.
Even when set to OFF, parameter settings will be preserved, and settings can be performed while viewing parameter values.

EXIT (F10)

Press the EXIT (F10) key to return to the main menu from the GEQ setting menu.

5-5. Parametric Equalizer (PEQ) Setting Menu (Modes C, D, E)

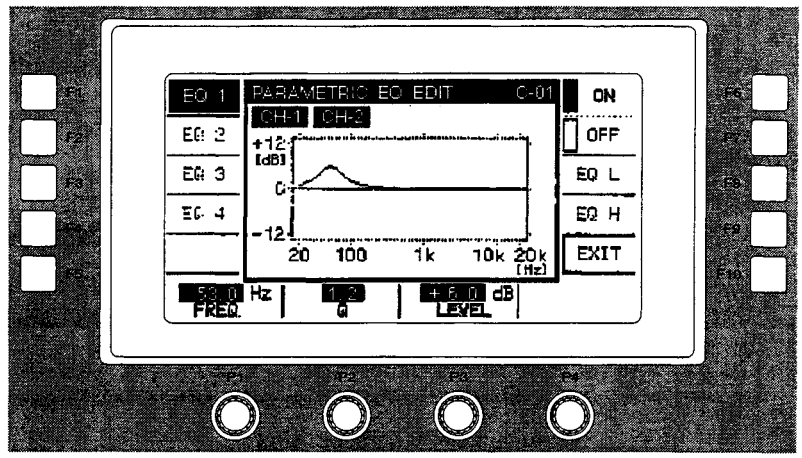
Used to set the 4-band peaking filter, LOW shelving filter, and HIGH shelving filter to set equalizing.
Set the respective screen for the 4 output channels in mode E.

Functions of function keys and parameter setting knobs used

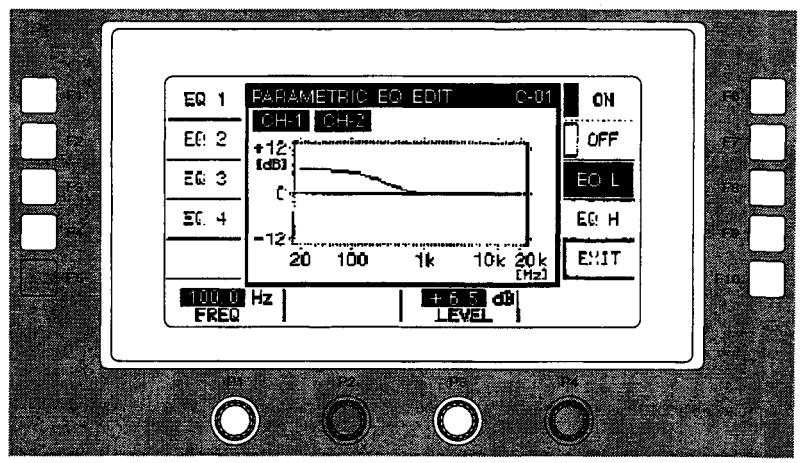
EQ1 (F1)	:	Sets EQ1.
EQ2 (F2)	:	Sets EQ2.
EQ1 (F3)	:	Sets EQ3.
EQ2 (F4)	:	Sets EQ4.
EQL (F8)	:	Sets the LOW SHELVING filter.
EQH (F9)	:	Sets the HIGH SHELVING filter.
FREQ (P1)	:	Sets the center frequency (20 Hz to 20 kHz, 1/12 oct steps)
Q (P2)	:	Sets Q (0.7, 0.9, 1.2, 3, 4.5, 7 (6 types))
LEVEL (P3)	:	Sets level (±12 dB, 0.5 dB steps)

Selecting the filter to be set

First select EQ to be set using the F1 to F4, F8 and F9 keys.
After selecting EQ to be set, set parameters using the P2, P3, P4 knobs.



(Example of screen where EQ1 is being set)



(Example of screen where LOW shelving is being set)

Setting filter parameters

Setting EQ1 to EQ4

FREQ (P1) : Selects a frequency (20 Hz to 20 kHz, 1/12 oct steps)
Q (P2) : Sets Q (0.7, 0.9, 1.2, 3, 4.5, 7 (6 types))
LEVEL (P3) : Sets level (±12 dB, 0.5 dB steps)

Setting the LOW SHELVING filter

FREQ (P1) : Selects a frequency (20 Hz to 1 kHz, 1/3 oct steps)
LEVEL (P3) : Sets level (±12 dB, 0.5 dB steps)

Setting the HIGH SHELVING filter.

FREQ (P1) : Selects a frequency (1.25 kHz to 16 kHz, 1/3 oct steps)
LEVEL (P3) : Sets level (±12 dB, 0.5 dB steps)

- Select the center frequency of the filter using FREQ (P1).
- Set Q of the filter with the Q (P2) key. The larger Q is, the narrower the frequency band width to be boosted (or cut) in each band. The smaller Q is, the wider the frequency band width to be boosted (or cut) in each band. (Q is not set when setting the LOW SHELVING filter and HIGH SHELVING filter.)
  Set the level (center frequency level) to be boosted and cut with the LEVEL (P3) key.

Other key functions

ON/OFF (F6/F7)

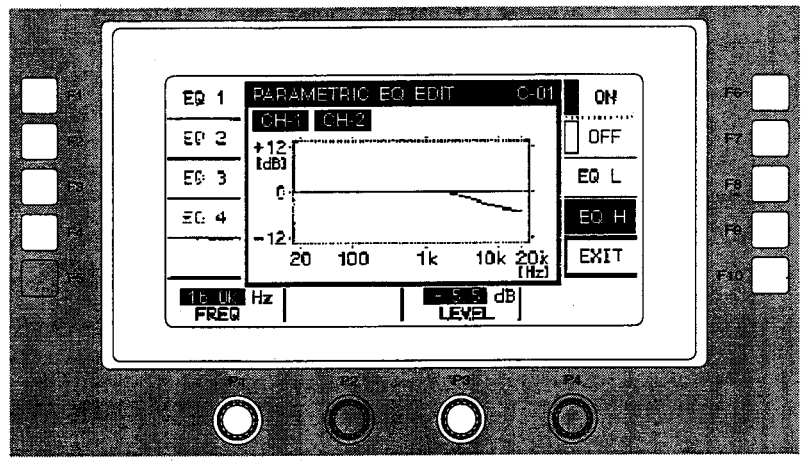
The ON/OFF (F6/F7) keys are used to set the PEQ function ON/OFF.
When ON (F6) is pressed, the PEQ function being set operates.
When OFF (F7) is pressed, the signal will pass through the processing block without the PEQ function operating.
Even when set to OFF, parameter settings will be preserved, and settings can be performed while viewing parameter values.

EXIT (F10)

Press the EXIT (F10) key to return to the main menu from the PEQ setting menu.

General EQ characteristics graph display

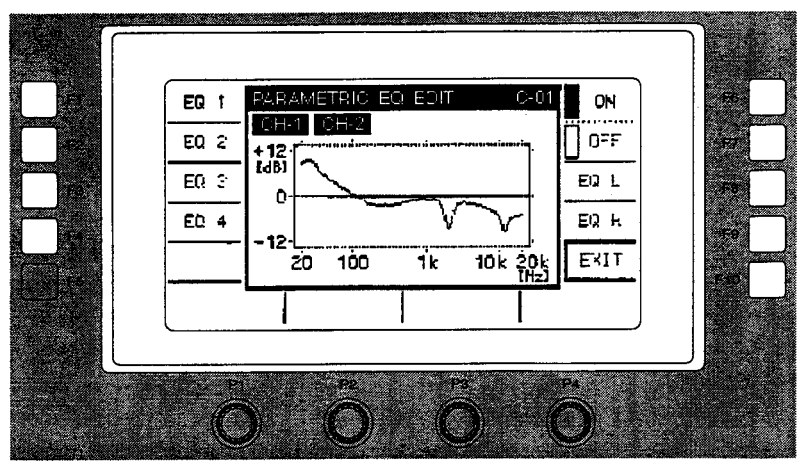
When the EQ to be set is selected, the individual characteristics of the EQ selected will be displayed.



(Example of screen where HIGH shelving filter is being set))

When EQ1 to 4, EQL, or EQH is selected, the key corresponding to any EQ (either of F1 to F4, F8, or F9) is pressed again, the selection is canceled, and the general characteristics graph will be displayed.

(However, the characteristics displayed here is different from the actual amplitude characteristics. Use this for reference.)



(Example of screen where the general characteristics is being displayed)

5-6. Notch Filter Setting Menu (Modes C, D)

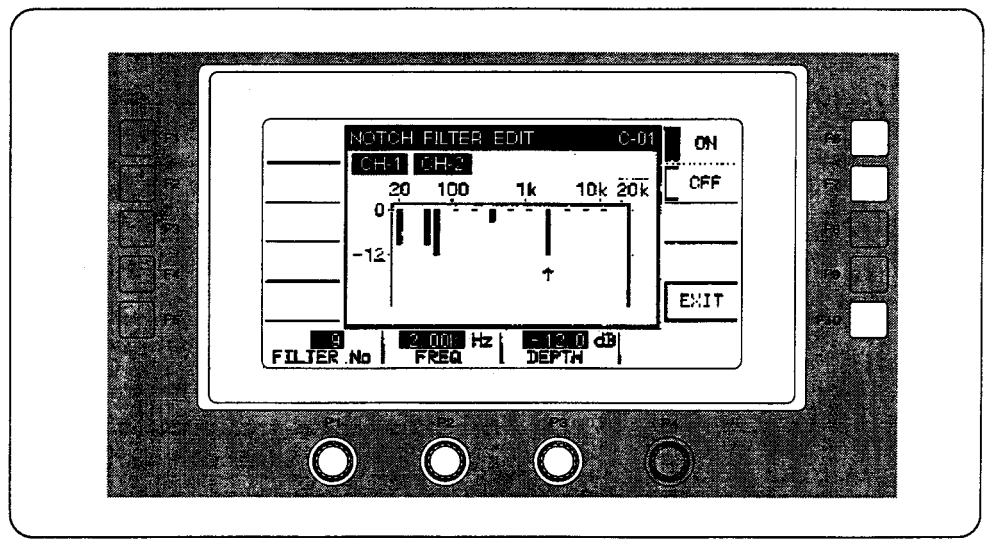
A filter for eliminating howling can be set for up to 12 bands.
This filter is a Q=15 band elimination filter, and a center frequency which cuts signals and the level (DEPTH) to be cut can be set.

Reference

In mode C, bands can be increased to 31 by mounting the optional SRP-70BK.

Functions of function keys and parameter setting knobs

FILTE No. (P1) : Selects the filter No. (1 to 12 (usual)).
FREQ (P2) : Sets the frequency (20 Hz to 20 kHz (1/12 oct steps)).
DEPTH (P3) : Sets the depth (0 dB to –12 dB (3 dB steps).



- The 12 filters (P1) (31 filters, when the optional device is mounted) are identified by No. 1 to 12 (1 to 31). First select the filter No. to be set, after selecting, set each filter using P2 and P3 knobs.
- Set the center frequency of the filter selected with FREQ (P2).
- Set the level to be cut by the filter with DEPTH (P3).

Other key functions

ON/OFF (F6/F7)

Sets all notch filter functions ON/OFF using the ON/OFF (F6/F7) keys.
When ON (F6) is pressed, the notch filter function operates.
When OFF (F7) is pressed, the signal will pass through the processing block without the notch filter function operating.
Even when set to OFF, parameter settings will be remained, settings can be performed while viewing parameter values.

EXIT (F10)

Press the EXIT (F10) key to return to the main menu from the notch filter setting menu.

5-7. Master Delay Setting Menu (Modes A to D)

Delay used in the crossover modes of A to D. This delay works with signals before they are crossover-divided.

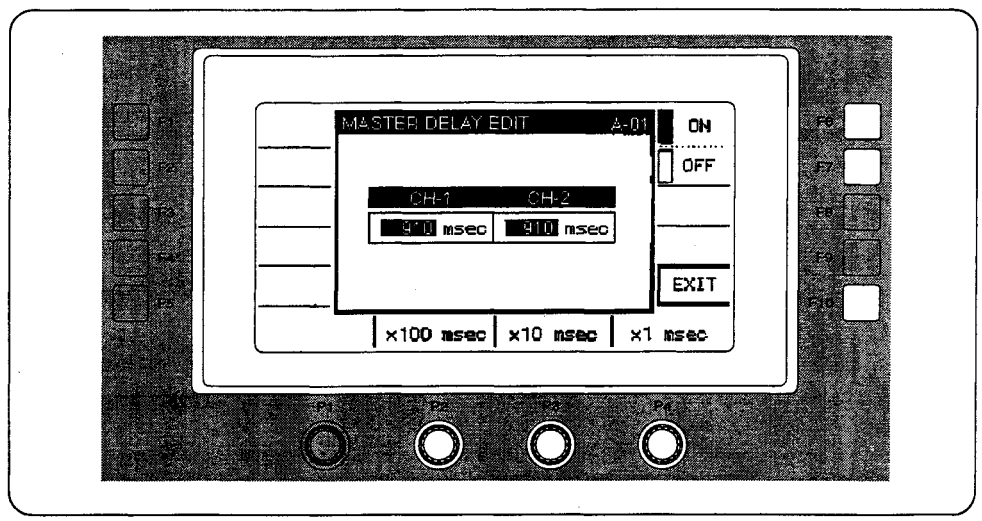
Up to 1 sec (1000 msec) delay can be set at 1 msec steps.

Functions of parameter setting knobs

× 100 msec (P2) : Increases/decreases a delay time in the unit of 100 msec for each rotation of the knob.

× 10 msec (P3) : Increases/decreases a delay time in the unit of 10 msec for each rotation of the knob.

× 1 msec (P4) : Increases/decreases a delay time in the unit of 1 msec for each rotation of the knob.



- The delay time can be set freely by the combination of the three knobs.

Other key functions

ON/OFF (F6/F7)

Sets all master delay functions ON/OFF using the ON/OFF (F6/F7) keys.

When ON (F6) is pressed, the master delay function operates.

When OFF (F7) is pressed, the signal will pass through the processing block without the master delay function operating.

Even when set to OFF, parameter settings will be preserved, and settings can be performed while viewing parameter values.

EXIT (F10)

Press the EXIT (F10) key to return to the main menu from the master delay setting menu.

5-8. Channel Delay Setting Menu (Modes A to D)

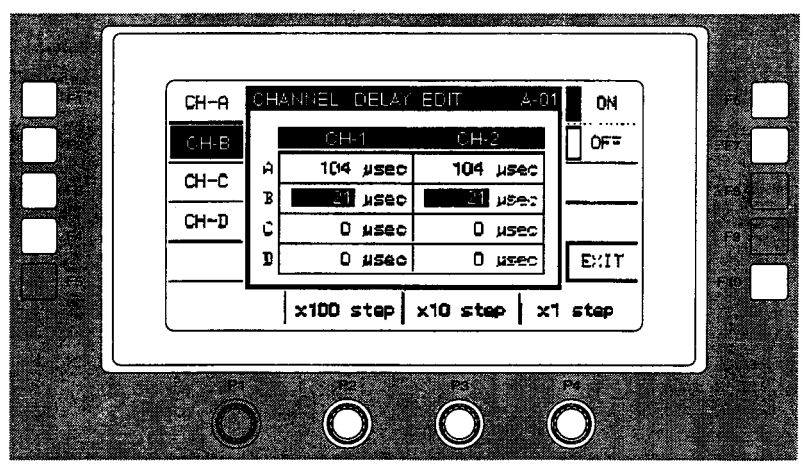
Enables to set a delay time for four output channels independently.
In order to set minute time alignment in the crossover mode (modes A to D), delays ranging from 10.4 µsec to 30 msec (in steps of 10.4 µsec) can be set for each channel.

Functions of function keys and parameter setting knobs

Set a desired channel from the four channels using any of F1 to F4 keys, then set the delay time of the selected channel using the parameter knob.

CH-A (F1) : Sets output channel A.
CH-B (F2) : Sets output channel B.
CH-C (F3) : Sets output channel C.
CH-D (F4) : Sets output channel D.
× 100 step (P2) : Increases/decreases the delay time in steps of 100 (=1.04 msec) for each rotation of the knob.
× 10 step (P3) : Increases/decreases the delay time in steps of 10 (=104 µsec) for each rotation of the knob.
× 1 step (P4) : Increases/decreases the delay time in steps of 1 (=10.4 µsec) for each rotation of the knob.

- Values are displayed in sec on the screen.
- Any delay time can be set by the combination of the three knobs.



(Example of screen where output channel B is being set)

Other key functions

ON/OFF (F6/F7)

The ON/OFF (F6/F7) keys are used to set all the channel delay functions ON/OFF.
When ON (F6) is pressed, the channel delay function operates.
When OFF (F7) is pressed, the signal will pass through the processing block without the channel delay function operating.
Even when set to OFF, parameter settings will be preserved, and settings can be performed while viewing parameter values.

EXIT (F10)

Press the EXIT (F10) key to return to the main menu from the channel delay setting menu.

5-9. Channel Delay Setting Menu (Mode E)

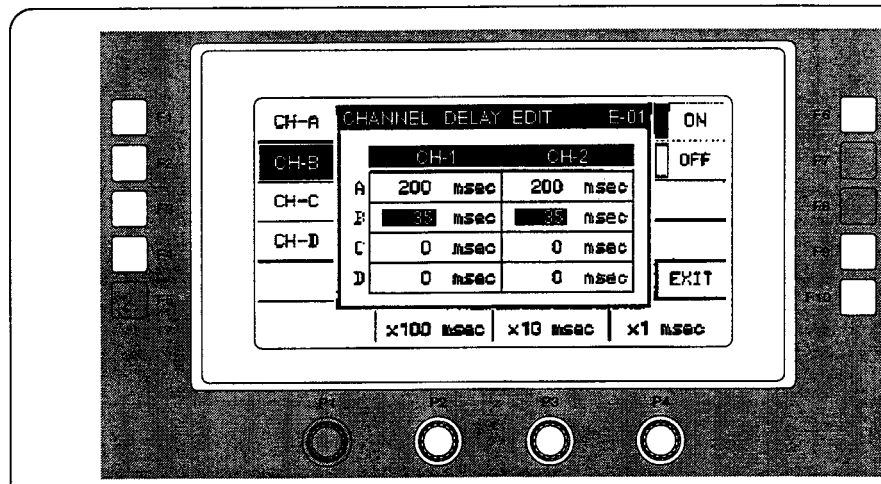
Enables the delay time to be set for four output channels independently.
In the distribution mode (mode E), delays up to 1 sec (1000 msec) can be set in steps of 1 msec for each channel.

Functions of function keys and parameter setting knobs

Set a desired channel from the four channels using any of F1 to F4 keys, then set the delay time of the selected channel using the parameter knob.

CH-A (F1) : Sets output channel A.
CH-B (F2) : Sets output channel B.
CH-C (F3) : Sets output channel C.
CH-D (F4) : Sets output channel D.
× 100 msec (P2) : Increases/decreases the delay time in 100 msec for each rotation of the knob.
× 10 msec (P3) : Increases/decreases the delay time in 10 msec for each rotation of the knob.
× 1 msec (P4) : Increases/decreases the delay time in 1 msec for each rotation of the knob.

- Any delay time can be set by the combination of the three knobs.



(Example of screen where output channel B is being set)

Other key functions

ON/OFF (F6/F7)

The ON/OFF (F6/F7) keys are used to set all the channel delay functions ON/OFF.
When ON (F6) is pressed, the channel delay function operates.
When OFF (F7) is pressed, the signal will pass through the processing block without the channel delay function operating.
Even when set to OFF, parameter settings will be preserved, and settings can be performed while viewing parameter values.

EXIT (F10)

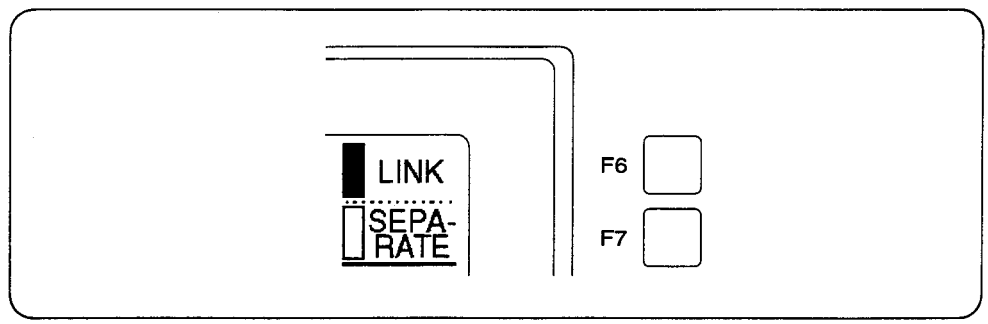
Press the EXIT (F10) key to return to the main menu from the channel delay setting menu.

5-10. Crossover Setting Menu (Modes A, B, C)

Enables up to 4 ways of crossover to be set.
The IIR filter is used for the crossover, and any of the following functions can be selected.

Cut-off frequency	:	20 Hz to 20 kHz (1/6 oct step)
Filter characteristics	:	Butterworth –12 dB/oct, Butterworth –18 dB/oct
		Butterworth –24 dB/oct
		Bessel –12 dB/oct, Bessel –18 dB/oct
		Bessel –24 dB/oct
		Linkwitz-Riley –12 dB/oct
		Linkwitz-Riley –24 dB/oct

The crossover can be set in the following two ways using the F6/F7 keys.
(F1/F7 are not switched unless pressed for more than two seconds.)



LINK setting (F6)

Sets the high cut filter of the low band channel and low cut filter of the high band channel to the same cut-off frequency and characteristics at a time at three cross points. The LINK setting is convenient when setting the basic crossover quickly.

SEPARATE setting

Sets the high cut filters and low cut filters of the four output channels independently. In the SEPARATE setting, special settings can be performed such as shifting the cut-off at the high band and low band of the cross point and changing the characteristics.
As the filter can also be turned off, 3 WAY crossover+1CH through out, etc. is realized.

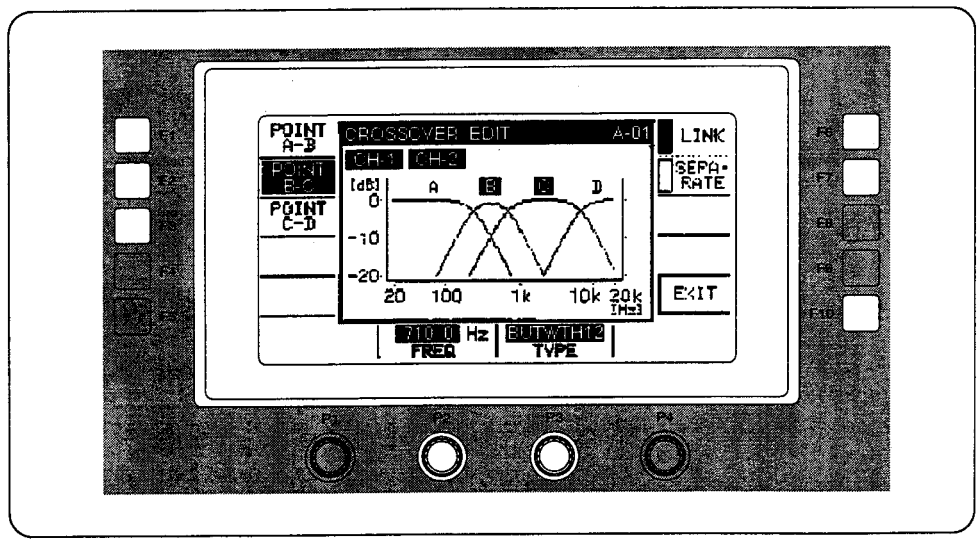
5-10-1. Crossover setting-LINK setting

Allocation of signal frequency band to four output channels A, B, C, and D.

In LINK setting, the lowest band signal is output to output CH-A, and higher band signals are output in the order of CH-B, CH-C, CH-D. Therefore, output connectors of the rear panel should be connected beforehand accordingly.

Functions of the LINK setting function keys and parameter setting knobs

Select points to be set of the three cross points (A-B, B-C, or C-D) using F1, F2, or F3 key, then set parameters of the crossover filters using the P2 and P3 knobs.



POINT A-B (F1) : Sets the cross point of output channel A and output channel B. (POINT A-B means the cross point of output channel A and out put channel B.)

POINT B-C (F2) : Sets the cross point of output channel B and output channel C.

POINT C-D (F3) : Sets the cross point of output channel C and output channel D.

FREQ (P2) : The crossover filter cut-off frequency 20 Hz to 20 kHz (1/6 oct steps)

TYPE (P3) : Selects the filter characteristics.

Reference

- The POINT A-B frequency can not be set higher than the point B-C frequency.
- The POINT B-C frequency can not be set higher than the point C-D frequency.

EXIT (F10)

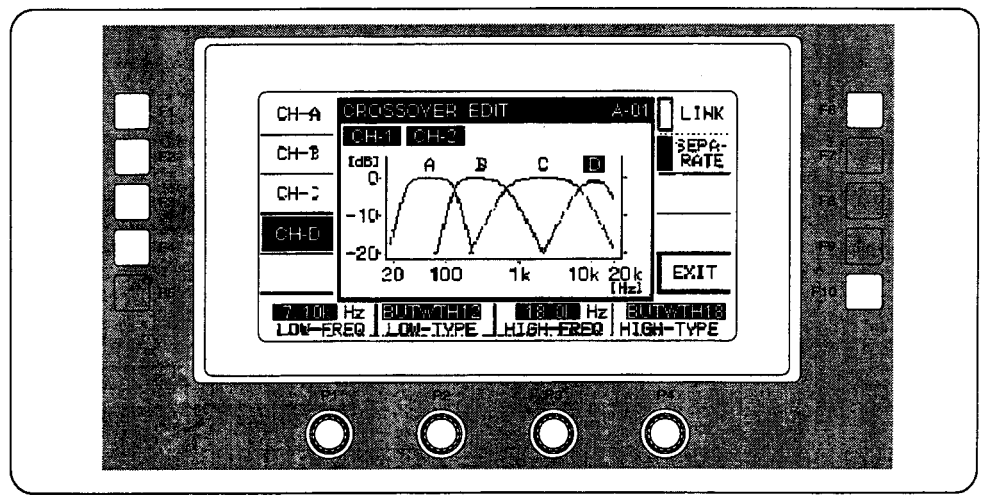
Pressing the EXIT (F10) key returns to the main menu from the crossover setting menu.

5-10-2. Crossover setting-SEPARATE setting

The low cut filter and high cut filter can be set freely for the four output channels A, B, C, and D in the SEPARATE setting. Unlike LINK setting, CH A, B, C, and D need not to be allocated from the low frequency.

Functions of SEPARATE setting function keys and parameter setting knobs

Select the channel to be set from the four output channels A, B, C, and D using the F1, F2, F3, or F4 key, then set the filter parameter using the P1, P2, P3, and P4 knobs.



CH-A (F1) : Selects the filter of output CH-A.
CH-B (F2) : Selects the filter of output CH-B.
CH-C (F3) : Selects the filter of output CH-C.
CH-D (F4) : Selects the filter of output CH-D.

LOW-FREQ (P1) : LOW-CUT filter cut-off frequency
OFF, 22.4 Hz to 18 kHz (1/6 oct steps)
LOW-TYPE (P2) : Selects the LOW-CUT filter characteristics.
HIGH-FREQ (P3) : HIGH-CUT filter cut-off frequency
22.4 Hz to 18 kHz (1/6 oct steps)
HIGH-TYPE (P4) : Selects the HIGH-CUT filter characteristics.

- **Set the LOW-CUT filter with P1 and P2.**
  Set the LOW-CUT filter cut-off frequency with LOW-FREQ (P1).
  Selects from 8 types of LOW-CUT filter characteristics with LOW-TYPE (P2).
- **Set the HIGH-CUT filter with P3 and P4.**
  Set the HIGH-CUT filter cut-off frequency with HIGH-FREQ (P3).
  Selects from 8 types of HIGH-CUT filter characteristics with HIGH-TYPE (P4).

Reference

The frequency parameter "OFF" means that the filter is not used.

EXIT (F10)

Pressing the EXIT (F10) key returns to the main menu from the crossover setting menu.

5-10-3. Crossover setting-LINK setting combined with SEPARATE setting

Performing the SEPARATE setting after LINK setting

In LINK setting, the lowest band signal is output to CH-A, and higher band signals are output in the order of CH-B, CH-C, CH-D. Therefore, output connectors of the rear panel should be connected beforehand accordingly.

In LINK setting, after setting the basic crossover, press the SEPARATE (F7) key more than two seconds to shift to SEPARATE setting. Operations can be continued from the crossover state set by LINK setting. Detailed settings can therefore be performed in SEPARATE setting after basic settings are performed in LINK setting.

Performing LINK setting after SEPARATE setting

Pressing LINK setting (F6) key in SEPARATE setting state for more than two seconds will set LINK setting.
However, at this time, any settings in the SEPARATE setting are set to the following states forcibly, and all parameters set by SEPARATE setting will be canceled.

Point A-B frequency : 250 Hz
Point B-C frequency : 1.6 kHz
Point C-D frequency : 10 kHz
Filter characteristics : Butterworth –12 dB/oct

NOTE

When shifting from SEPARATE setting to LINK setting, all output MUTE switches will be turned ON to mute outputs.

5-11. Crossover Setting Menu (Mode D)

Linear phase FIR (finite length impulse response type) filter

In mode D, the crossover filter is used as the liner phase FIR filter.

The linear phase FIR filter is a special filter for processing digital signals and the group delay becomes flat in the whole frequency bands. In other words, they are only delayed by the same time in the whole frequency bands, and unlike the analog filter, their phases are not changed around the cut-off frequency.

In mode D, the two output channels A and B can be used to set 2-way crossover. Output channel A is assigned to low band, and output channel B to high band.

The linear phase FIR filter characteristics used is Linkwitz-Riley -24 dB/oct, and the crossover frequency can be selected from 400 Hz to 18 kHz (1/6 oct steps).

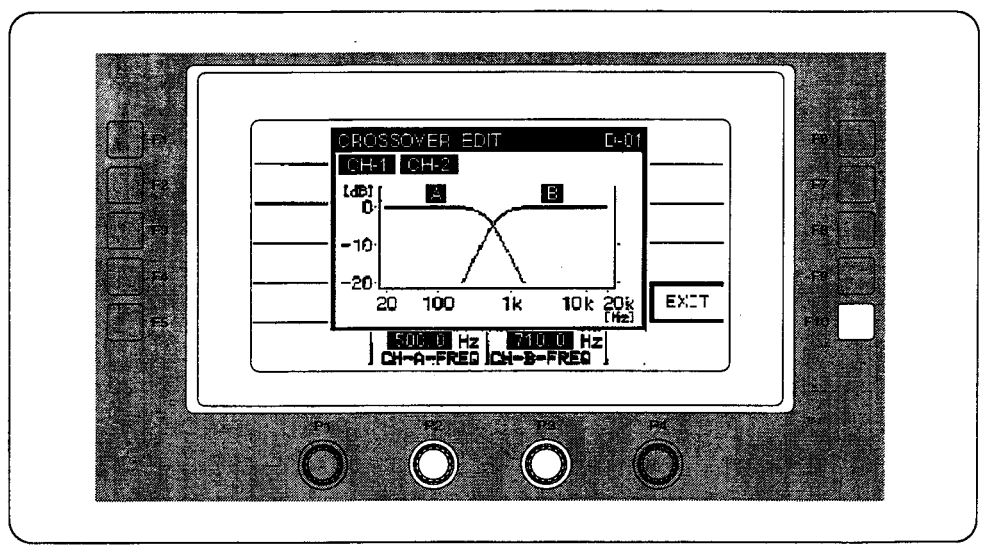
Reference

This filter can be extended to the 4 WAY crossover by mounting the optional SRP-70BK.

Functions of parameter setting knobs

CH-A-FREQ (P2) : Output CH-A HIGH-CUT filter cut-off frequency
400 Hz to 18 kHz (1/6 oct steps)

CH-B-FREQ (P3) : Output CH-B LOW-CUT filter cut-off frequency
400 Hz to 18 kHz (1/6 oct steps)



EXIT (F10)

Pressing the EXIT (F10) key returns to the main menu from the crossover setting menu.

5-12. Limiter/Compressor Setting Menu (All Modes)

Functions of function keys and parameter setting knobs

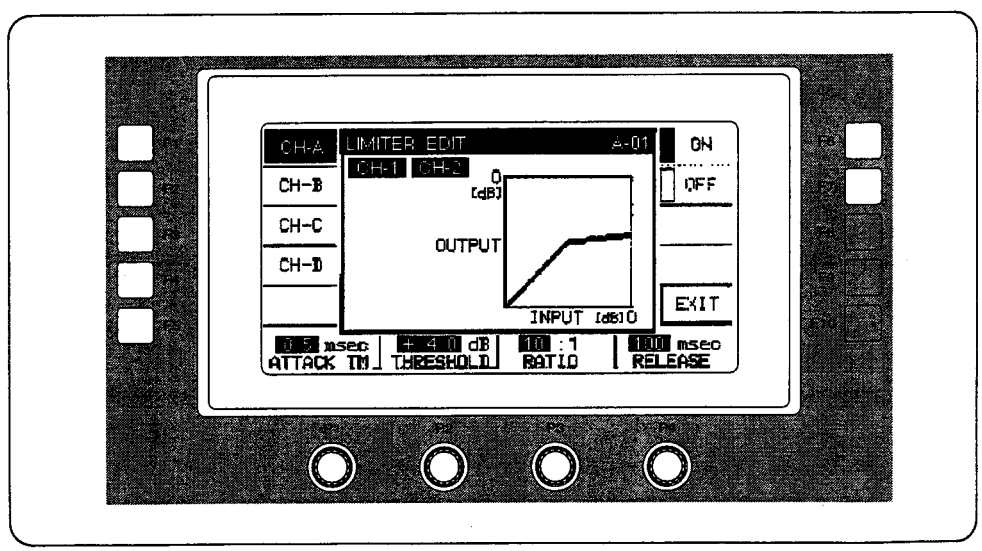
Set a desired channel from the four channels using any of F1 to F4 keys, then set the limiter/compressor of the output channel selected using the parameter knob.

CH-A (F1) : Sets output channel A.
CH-B (F2) : Sets output channel B.
CH-C (F3) : Sets output channel C.
CH-D (F4) : Sets output channel D.

ATTACK (P1) : Sets the attack time (0.5, 1, 2.510, 20, 50, 100, 200 (msec)).
THRESHOLD (P2) : Sets the threshold level (+24, dB to – 6 dB, at 2 dB steps).
RATIO (P3) : Sets the compression ratio (2 : 1, 4 : 1, 10 : 1, or ∞ : 1).
RELEASE (P4) : Sets the release time (100 msec to 1 sec, at 100 msec steps).

ON/OFF (F6/F7)

The ON/OFF (F6/F7) keys are used to set the limiter/compressor function ON/OFF.
ON/OFF are set for each of eight output channels.
When ON (F6) is pressed, the limiter/compressor function operates.
When OFF (F7) is pressed, the signal will pass through the processing block without the limiter/compressor function operating.
Even when set to OFF, parameter settings will be preserved, and settings can be performed while viewing parameter values.



EXIT (F10)

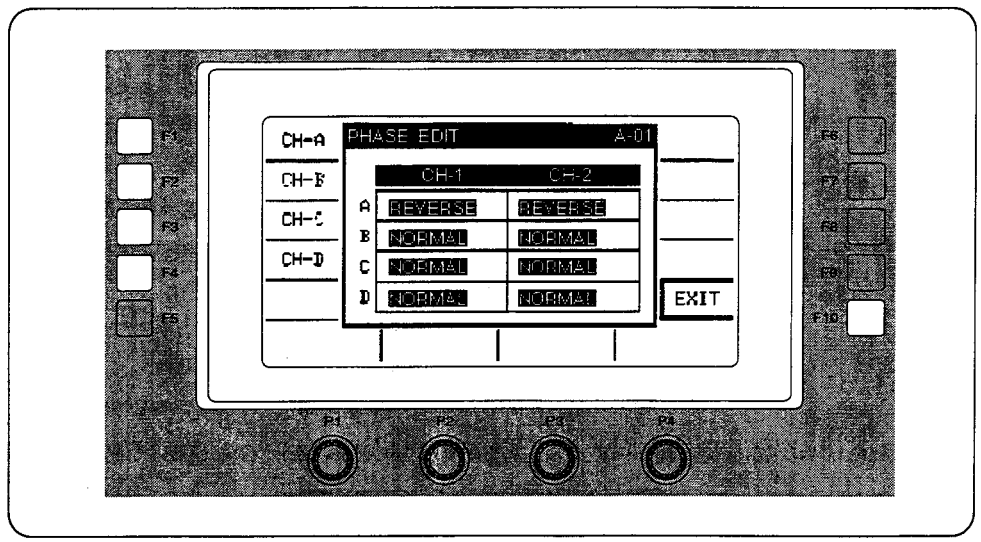
Press the EXIT (F10) key to return to the main menu from the limiter/compressor setting menu.

5-13. Phase Setting Menu (Modes, A, B, C, D)

Functions of function keys

CH-A (F1) : Sets the signal phase of channel A.
CH-B (F2) : Sets the signal phase of channel B.
CH-C (F3) : Sets the signal phase of channel C.
CH-D (F4) : Sets the signal phase of channel D.

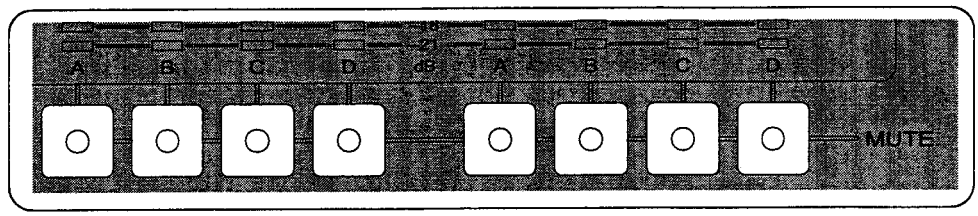
Switches between NORMAL/REVERSE each time pressed.



EXIT (F10)

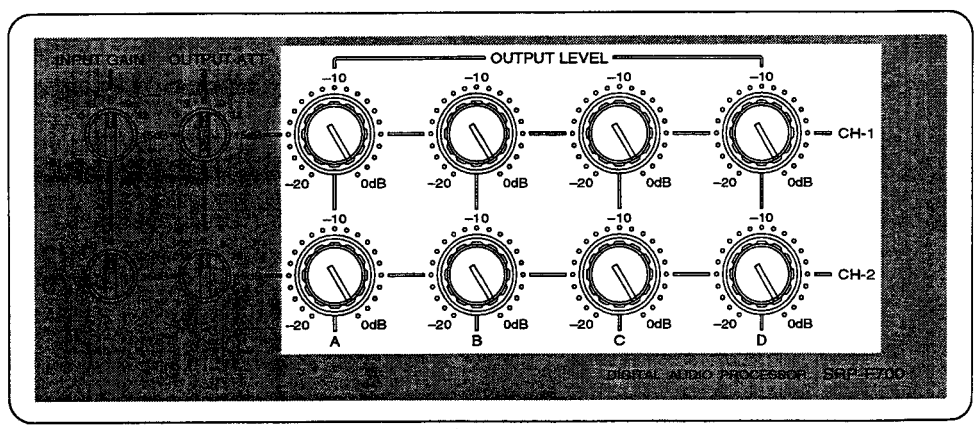
Press the EXIT (F10) key to return to the main menu from the phase setting menu.

5-14. Mute Setting (Regardless of the mode)



- The MUTE of the eight output channels is set using the eight MUTE switches on the front panel.
- Each time a switch is pressed, the channel is muted or released from mute.
  - LED lights up : Output mute is ON.
  - LED goes off : Output mute is OFF.
- The MUTE can be set regardless of the menu on the LCD screen.
- The ON/OFF setting of the MUTE switch can be stored as part of the parameter in the program or recalled.
- When MUTE is turned ON/OFF, as the output signal is switched by fade in/fade out, there is no click noise.

5-15. OUTPUT Level Adjustment (Regardless of the mode)



- A respective OUTPUT level adjustment control is provided for the eight outputs on the front panel.
- These can be set freely regardless of the menu state on the LCD.
- The data on the volume control position (angle) set can be stored as part of the parameter in the program or recalled.
- Each volume control level changes continuously when rotated. The change per mark on the scale is about 1 dB. Take note that especially near the maximum level (0 dB) and minimum level (–20 dB), change is small due to the volume characteristics.

5-16. Program Menu

Parameter groups that are set to perform a certain process of input signals to output are called "PROGRAM".

Storing and recalling programs

Programs are stored in the internal non-volatile memory. Up to 20 programs can be stored for each of the five modes and recalled later.

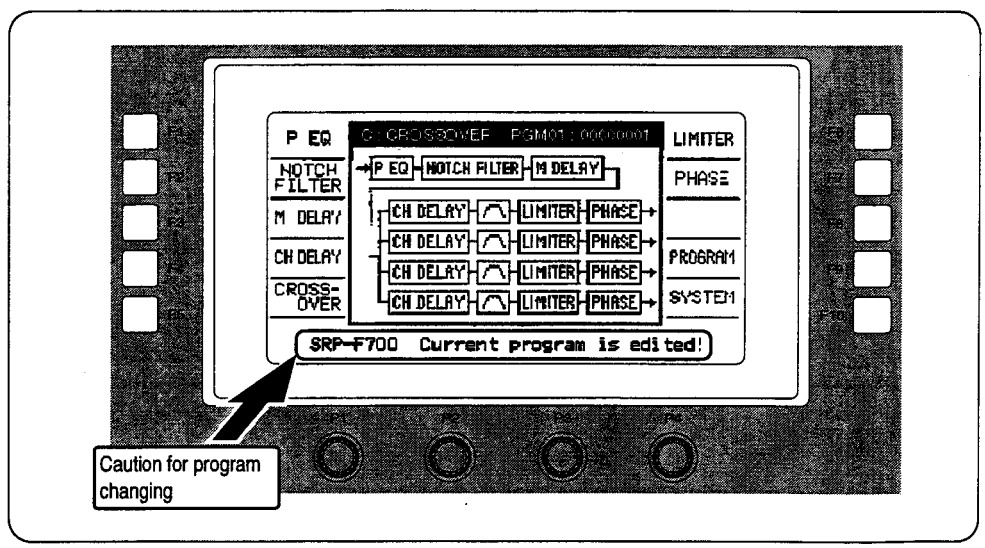
Programs stored in the non-volatile memory are identified by No., and names can be assigned to them.

Deleting programs and read-only function

Unnecessary programs can be deleted or programs can be prevented from being deleted accidentally using a read-only function.

Display of program No. and name being used

No. and name of a program being used are displayed at the top most part of the main menu. If No. and name are not displayed, the status being used will not be stored in the non-volatile memory. When parameters are changed after recalling a program stored or when parameters are set after storing the program being used once, "Current program is edited!" is displayed at the bottom most part of the main menu. This means that a program being used has been changed from that stored.



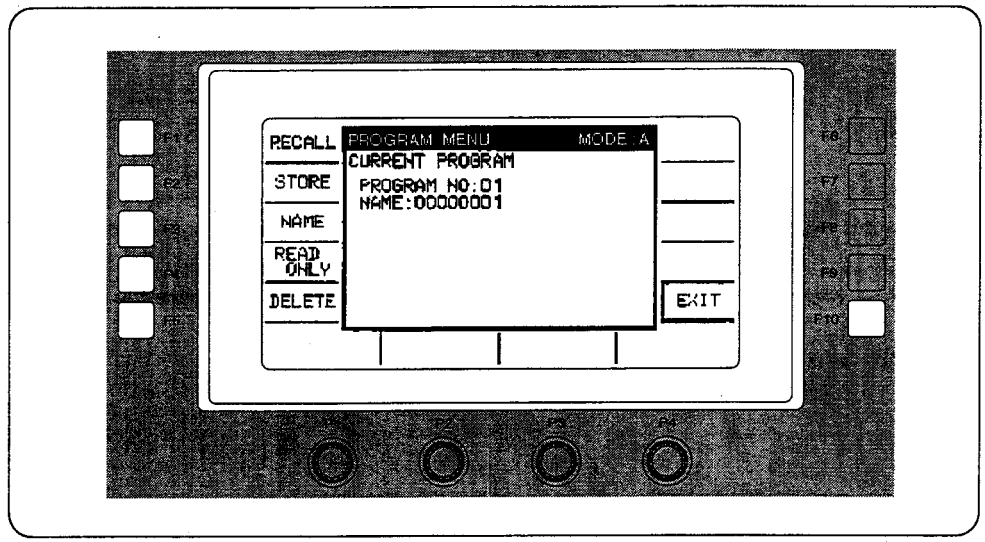
Reference

Backing up program

A program being used when the power is OFF can be maintained for about six months with a backup chargeable battery even if the power is OFF. When a program is stored in the non-volatile memory using the program menu, it can be recalled after other programs are used or when the power is OFF for more than six months.

Program menu screen

To perform program settings, press the PROGRAM (F9) at the main menu to display the program menu screen.



In the program menu screen, information related to a program being used is displayed ("CURRENT PROGRAM" is displayed).

MODE	:	Mode currently used
PROGRAM No.	:	Program No. currently used
NAME	:	Program name currently used
		* In case of a read-only program, "READ ONLY" is displayed.

The following operations are performed in the program menu.

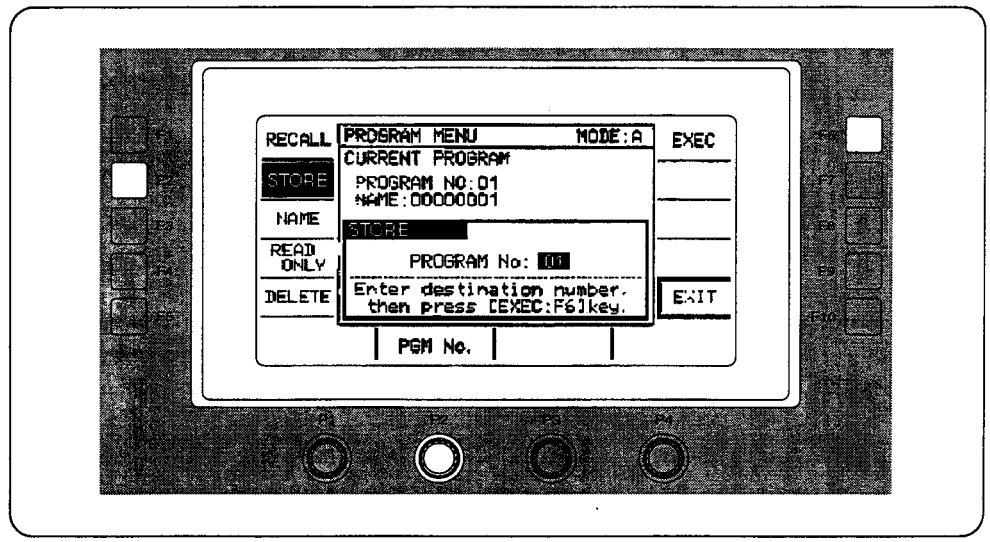
RECALL (F1)	:	Recalls a program.
STORE (F2)	:	Stores a program.
NAME (F3)	:	Assigns a name to a program.
READ ONLY (F4)	:	Prevents a program from being over written/deleted.
DELETE (F5)	:	Deletes a program.

Reference

Only programs in the mode currently used can be operated in the program menu. To recall other mode programs, switch modes using the system menu first.

Storing the program currently used (STORE)

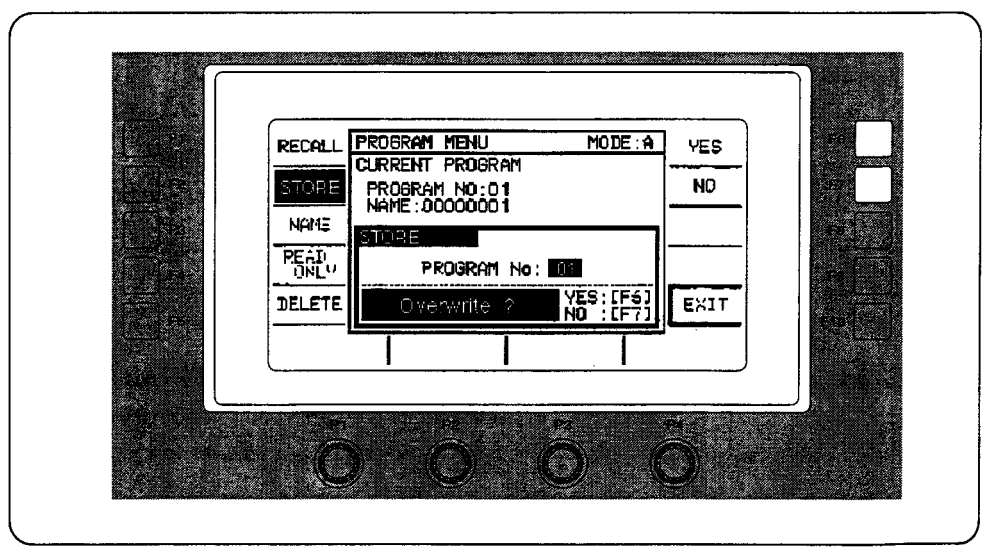
1 Press STORE (F2) at the program menu screen. (The STORE screen is displayed.)



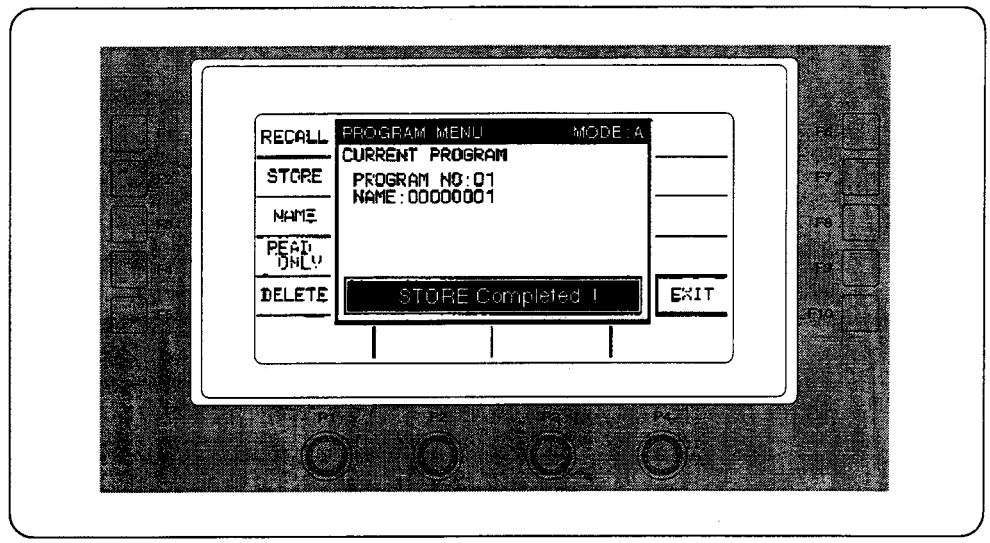
2 Select a program No. used for storing using the PROGRAM NUMBER (P2) knob. (The program No. set with "READ ONLY" can not be selected.)

3 When the program No. used for storing is displayed, press the EXEC (F6) key to define.

4 If the program No. selected has been used for storing a program, determine whether "OVERWRITE" is performed or not. Press the YES (F6) key to perform "OVERWRITE" or press the NO (F7) key not to perform "OVERWRITE" and select a program No. again.



5 "STORE Completed" is displayed, and No. of the program being used is changed to that used for storing.



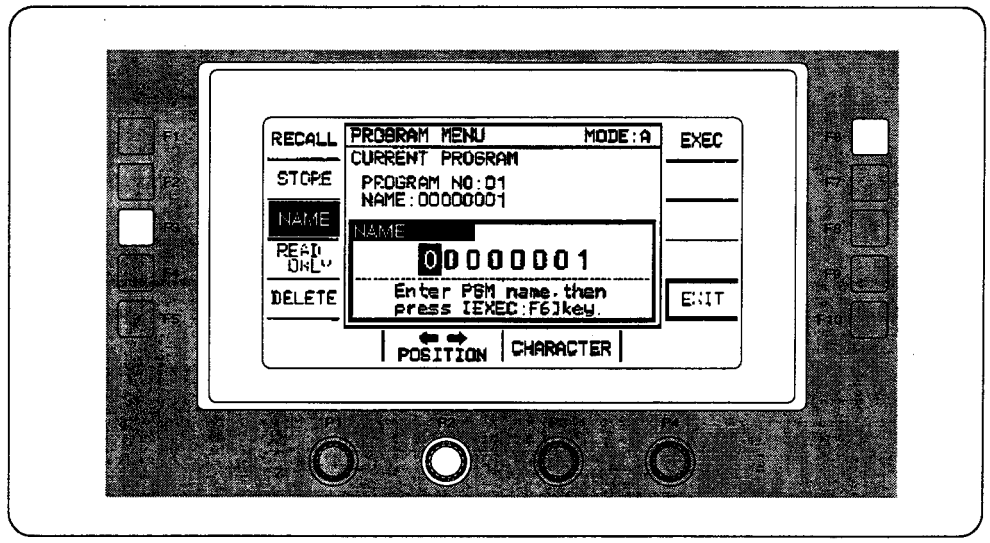
Reference

When a program is stored, the state of the mute switch and output level knob will also be stored at the same time.

Assigning a name to a program (NAME)

1 Press the NAME (F3) key at the program menu screen.

(The NAME screen is displayed.)



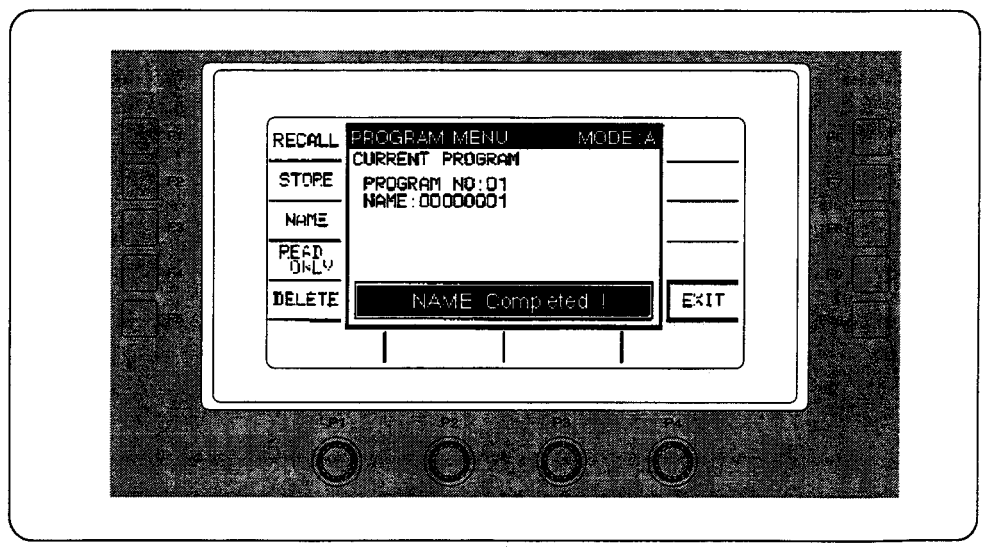
2 Enter 8 characters name using the P2 and P3 knobs.

←→ (P2) : Selects one from the 8 characters.

CHARACTER (P3) : Selects the character selected by the cursor using P2.

3 After entering 8 characters, define them by pressing the EXEC (F6) key.

If a program being used is set with READ ONLY, the name can not be changed.



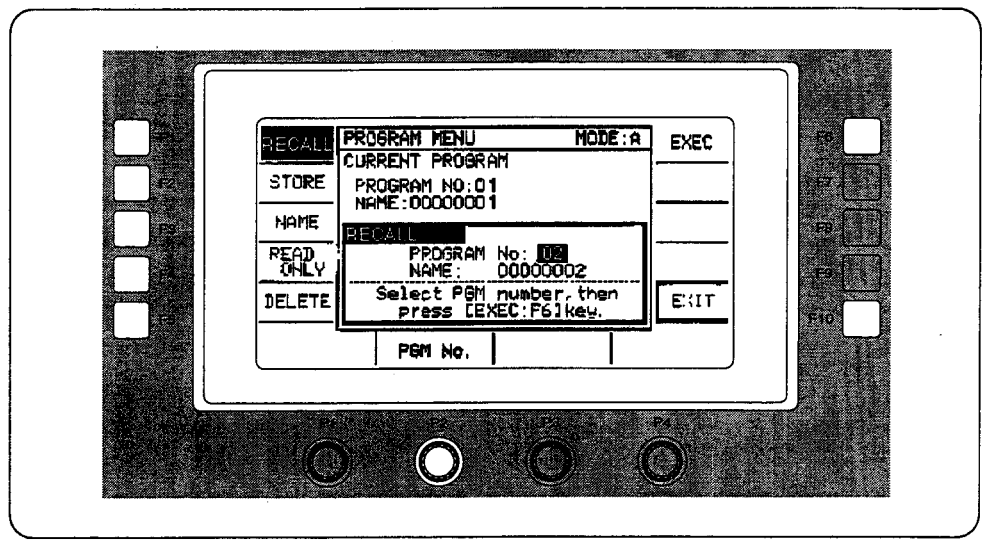
NOTE

NAME is the process of assigning a name to a program in the non-volatile memory. Therefore, store the program being used, then assign a name to it.

When defining a name by pressing the EXEC (F6) key, the program is stored in the non-volatile memory. The name need not be stored thereafter.

Recalling a program from the memory (RECALL).

1 Press the RECALL (F1) key at the program menu screen.
(The RECALL screen is displayed.)



2 Select the program to be recalled using the PROGRAM NUMBER (P2) knob. The No. and name of the program to be recalled are displayed on the RECALL screen.

3 When the program No. to be recalled is displayed, press the EXEC (F6) key to recall the program.

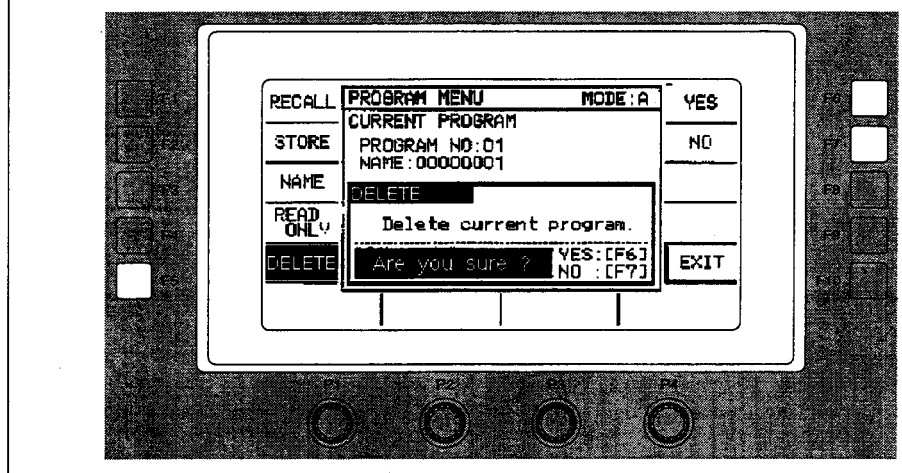
4 The main menu screen will be returned, and the program is recalled.

NOTE

When a program is recalled, the existing program is deleted. Store the program being used before recalling a program if required.

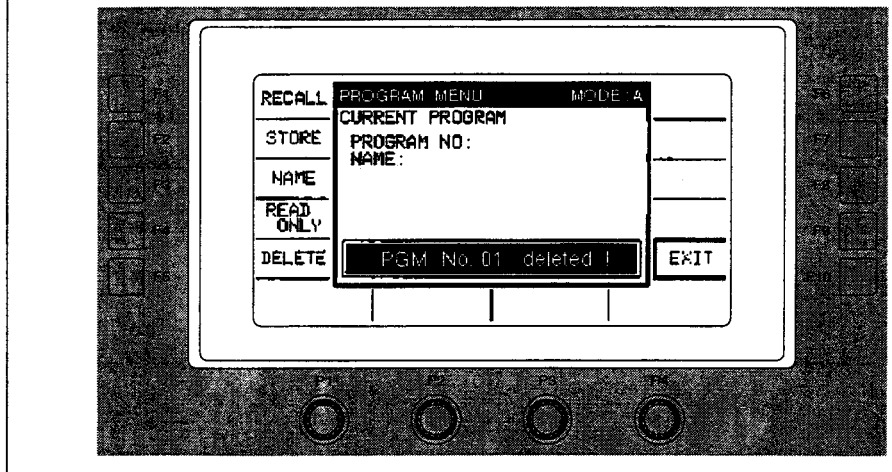
Deleting a program (DELETE)

1 Recall the program to be deleted.



2 Display the program menu, and press the DELETE (F5) key. The DELETE confirmation menu is displayed. (If the program being used is set with READ ONLY, the program can not be deleted unless the READ ONLY is canceled.)

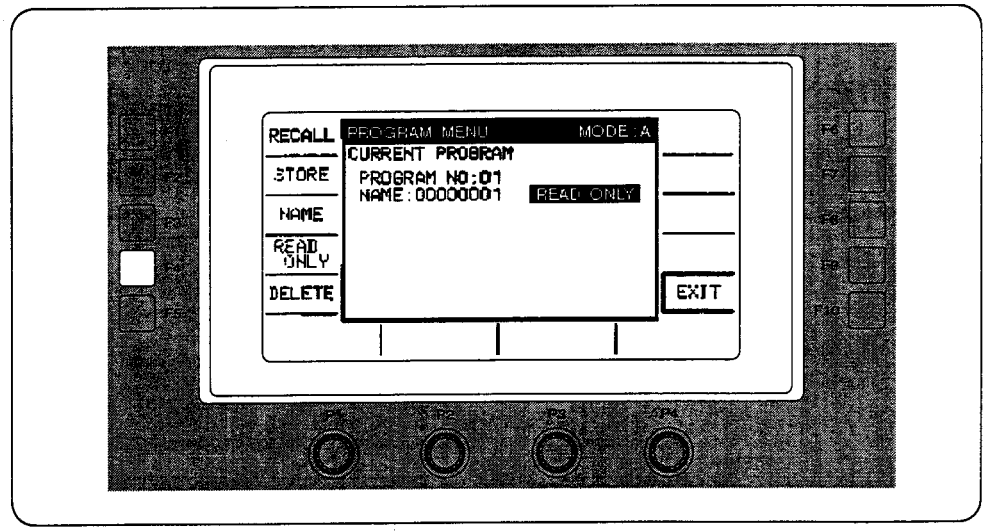
3 To delete the program, press the EXEC (F6) key.



This operation deletes the data in the non-volatile memory.
Although the program being used is preserved, and the No. and name on the screen are deleted.

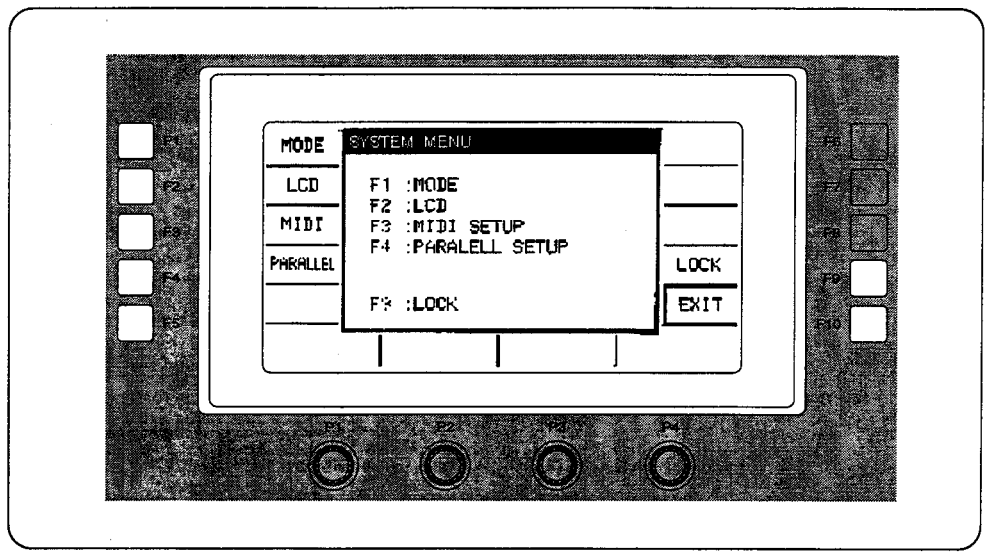
Preventing a program from being over-written/deleted (READ ONLY)

- When critical programs in the non-volatile memory are set with READ ONLY, the programs can not be over-written or deleted (can be recalled using the RECALL). This prevents the critical programs from being over-written or deleted (using DELETE) even if other programs are stored by over-writing them later.
- Setting/canceling the READ ONLY are performed with a program in use.
- Press the READ ONLY (F4) key at the program menu screen.
- Setting and canceling are switched with the program being used each time the key is pressed.
- If the READ ONLY is set to all 20 programs in one mode, the new program can not be stored.



5-17. System Menu

To display the system menu, press the SYSTEM (F10) key at the main menu.



The following settings can be performed in the system menu.

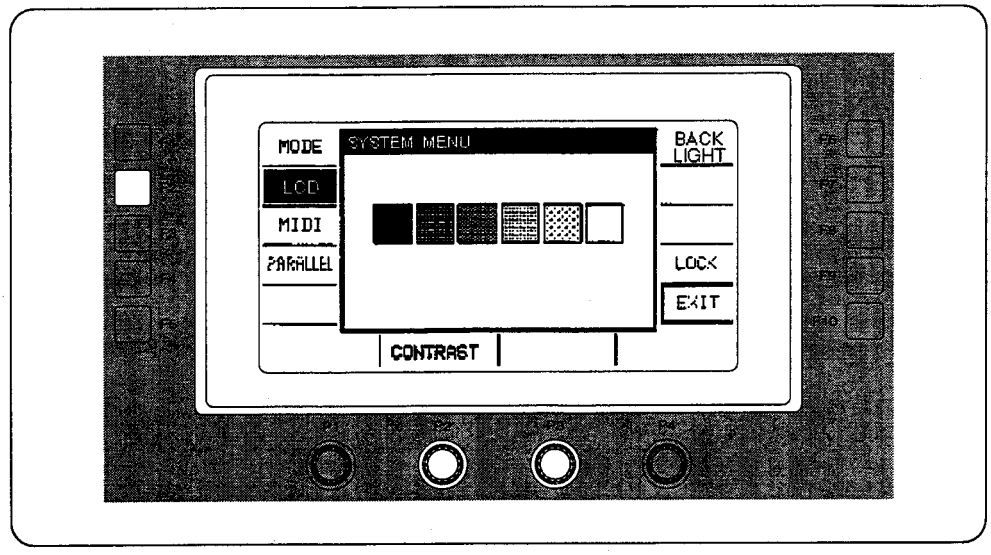
MODE (F1)	:	Selects modes (in the crossover mode).
LCD (F2)	:	Adjusts the LCD contrast, and puts out the back light.
MIDI (F3)	:	Sets the program change using the MIDI.
PARALLEL (F4)	:	Sets the program change using the PARALLEL REMOTE.
RS-422A (F5)	:	Sets and operates (optional) the external control function using RS-422.
LOCK (F9)	:	Locks/unlocks devices (prevents mis-operation)

Changing modes

Modes A to D can be selected during use in the crossover mode.
It is not possible to switch to the distribution mode (mode E) during the crossover mode (modes A to D) and switch to the crossover mode (modes A to D) during the distribution mode (mode E).

For how to select modes, refer to page 10 of "Selecting Mode".

1 Display the system menu and press the LCD (F2) key to display the LCD submenu.



2 Adjust the contrast of the LCD display using the CONTRAST (P2) knob.

Reference

The contrast of the LCD changes depending on the temperature of the LCD in the unit. As the temperature becomes higher, the LCD becomes white.

Turn ON the power and leave the unit alone for a while to warm up, then adjust the contrast as desired. This memorizes the best contrast state, eliminating the need to adjust the contrast hereafter.

3 Turn OFF the back light using the BACK LIGHT (F6) key.

Press the BACK LIGHT (F6) key for more than two seconds.

The back light goes off, and the main menu is returned to the LCD screen. To light up the back light again, press any of F1 to F10 function keys (At this time, the function keys only serve to light up the back light).

When the power is turned ON, the back light is always lit.

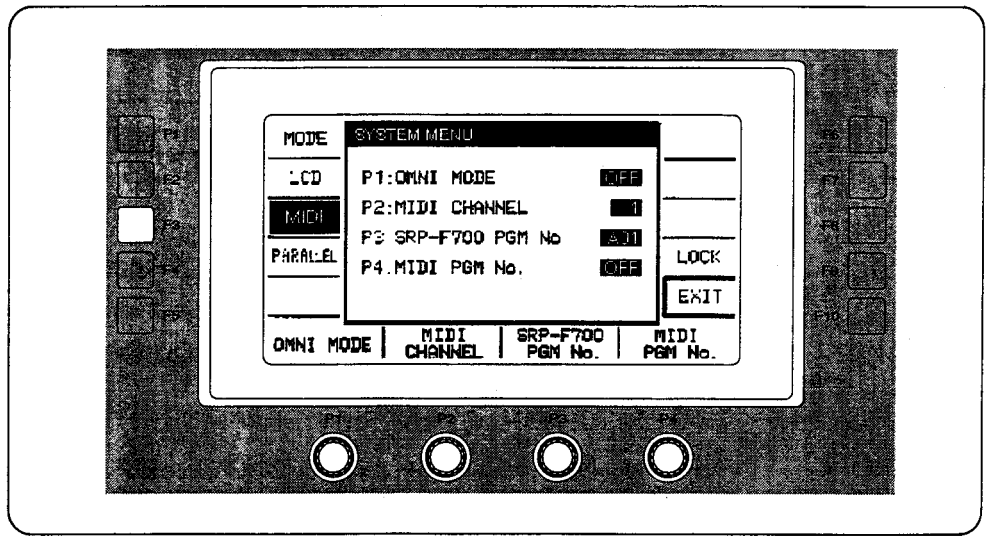
The SRP-F700 is equipped with the MIDI IN terminal. Programs of the SRP-F700 can be recalled from the external MIDI devices.

Signals received by MIDI

Program change message	:	1100nnnn, Oppppppp (nnnn=CHANNEL No.-1, PPPPPPP=1 to 127)
Omni OFF message (BnH, 7CH)	:	1011nnnn, 01111100 (nnnn=CHANNEL No.-1)
Omni ON message (BnH, 7DH)	:	1011nnnn, 01111101 (nnnn=CHANNEL No.-1)

Perform the following settings on the SRP-F700 side.

1 Displays the system menu from the main menu (F10).



2 Displays the MIDI submenu.

3 Set the followings using the parameter knobs.

OMNI MODE (P1)	:	Sets the OMNI mode ON/OFF of the SRP-F700.
MIDI CHANNEL (P2)	:	Sets the MIDI BASIC CHANNEL of the SRP-F700.
SRP-F700 PGM No. (P3)	:	Selects a program No. of the SRP-F700 to be recalled by MIDI.
MIDI PGM No. (P4)	:	Specify a program No. of the MIDI message used to recall the program of the SRP-F700 selected with P3.

- Select a program No. of the SRP-F700 with P3, then specify a MIDI program No. corresponding to it with P4.
  One MIDI program No. can not be assigned to several program Nos. of the SRP-F700.

- A MIDI program No. can be assigned to a program which is not stored in the memory. However, the program is not changed even when the corresponding MIDI message is received.

- A program No. can be assigned to programs in modes other than that being used.

- To change programs with MIDI, perform MIDI setting, and then display the main menu screen. Programs can not be changed unless the main menu screen is displayed.

- The MIDI settings described above are maintained after the power is turned OFF.

- The OMNI ON/OFF message can be set either on the panel or from an external device. In using an external device, signals are received only when the MIDI basic channel set by the external device is identified.

Setting the PARALLEL REMOTE

Programs can be changed using the PARALLEL REMOTE terminal on the rear panel.

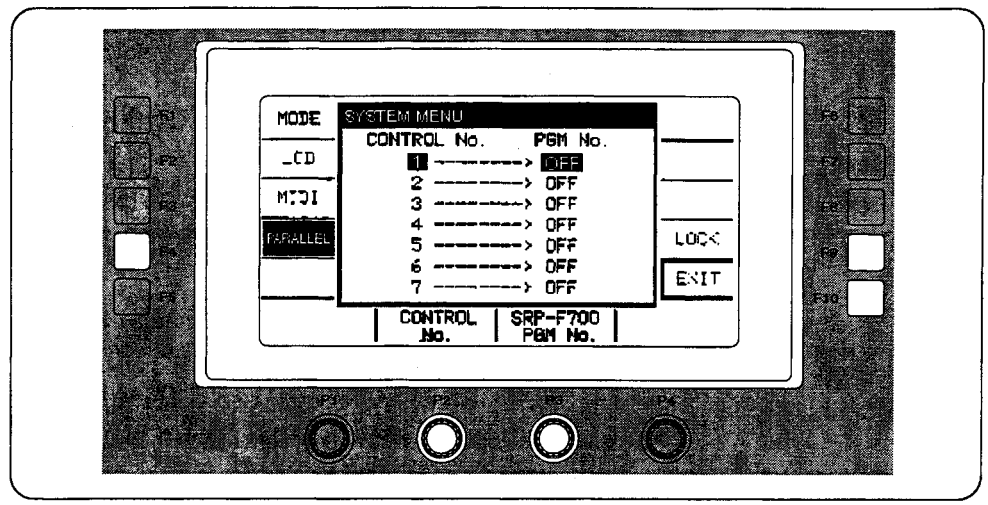
The terminal pin configuration is as follows.

Pin No	Connection
1	CONTROL NO.1
2	CONTROL NO.2
3	CONTROL NO.3
4	CONTROL NO.4
5	CONTROL NO.5
6	CONTROL NO.6
7	CONTROL NO.7
8 to 13	NC
14 to 25	GND

When one of pins No. 1 to 7 is connected to GND (14 to 25) for more than two seconds, programs are changed.

1 Display the system menu from the main menu.

2 Press the PARALLEL (F4) key to display the PARALLEL REMOTE setting screen.



- Assign the SRP-F700 program Nos. (A01 to A20, B01 to B20, C01 to C20, D01 to D20, E01 to E20) to seven CONTROL Nos. respectively. (Select a CONTROL No. using the P2 knob, then select a SRP-F700 program No. corresponding to the CONTROL No. using the P3 knob.) Up to seven programs can be set.

- A program No. can be assigned to a program which is not stored in the memory. However, the program is not changed even when the corresponding signal is received.

- A program No. can be assigned to programs in modes other than that being used.

- In the PARALLEL REMOTE, programs can be changed amongst different modes in the crossover mode. It is not possible to switch to the distribution mode during the crossover mode and switch to the crossover mode during the distribution mode.

- To change programs with the PARALLEL REMOTE, perform the setting, and then display the main menu screen. (Programs can not be changed unless the main menu screen is displayed.)

- Even when the program change signal ordering change to the program being used is received, it is ignored, and the program is not recalled.

- When one of pins No. 1 to 7 is connected for more than two seconds, programs are changed.

- The PARALLEL REMOTE settings described above are maintained after the power is turned OFF.

- The PARALLEL REMOTE operates even if the unit is locked.

Lock function

In order to prevent the SRP-F700 from mis-operation, the lock function is provided to invalid the switch operation on the panel.
The following two locks can be set.

- LOCK WITH CODE No. function:4-digit code No. is registered for the lock setting. The lock is unlocked only when the code No. is entered correctly.

- SIMPLE LOCK function:The unit is locked/unlocked without setting the code No.

Reference

- When the LOCK WITH CODE No. function is used, only those who know the code No. can unlock the lock to prevent settings from being changed accidentally.

- As for the SIMPLE LOCK function, the lock can be unlocked by anyone who knows the unlock procedure.

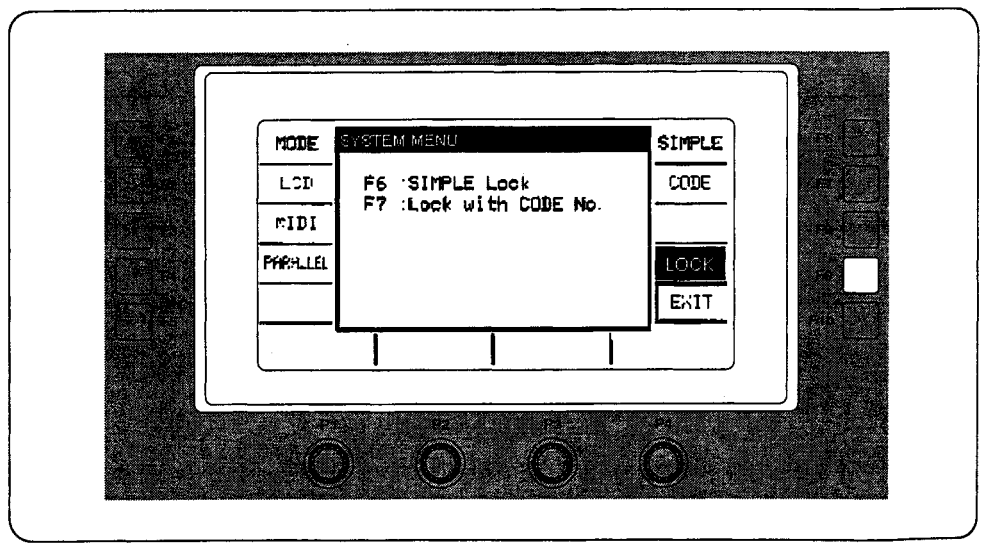
In the lock state, operations other than those described below can not be performed.

- Power supply OFF
- MUTE switch (eight) ON/OFF
- LCD adjustment function in the system menu
- Unlock (lock) function in the system menu
- Operations by the external device

Lock menu

1 Display the system menu (F10) from the main menu.

2 Press the LOCK (F9) key to display the LOCK menu.

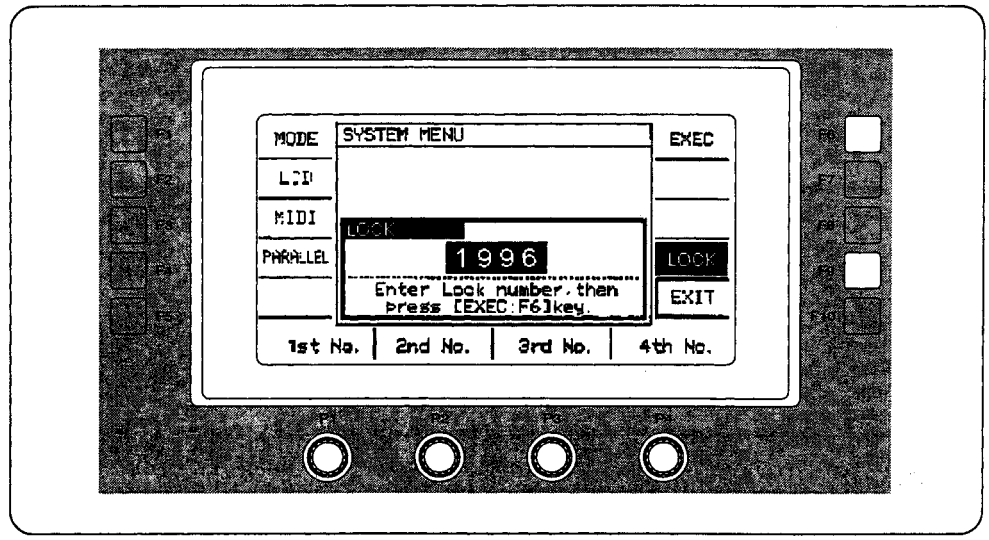


Setting the LOCK WITH CODE No. function

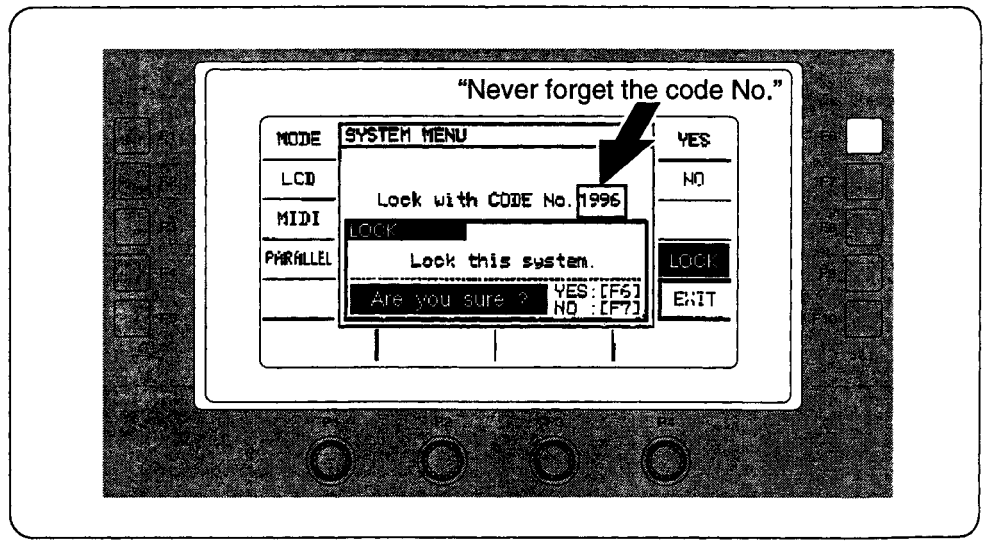
1 Display the system menu (F10) from the main menu.

2 Press the LOCK (F9) key to display the LOCK menu.

3 Press the CODE (F7) key.

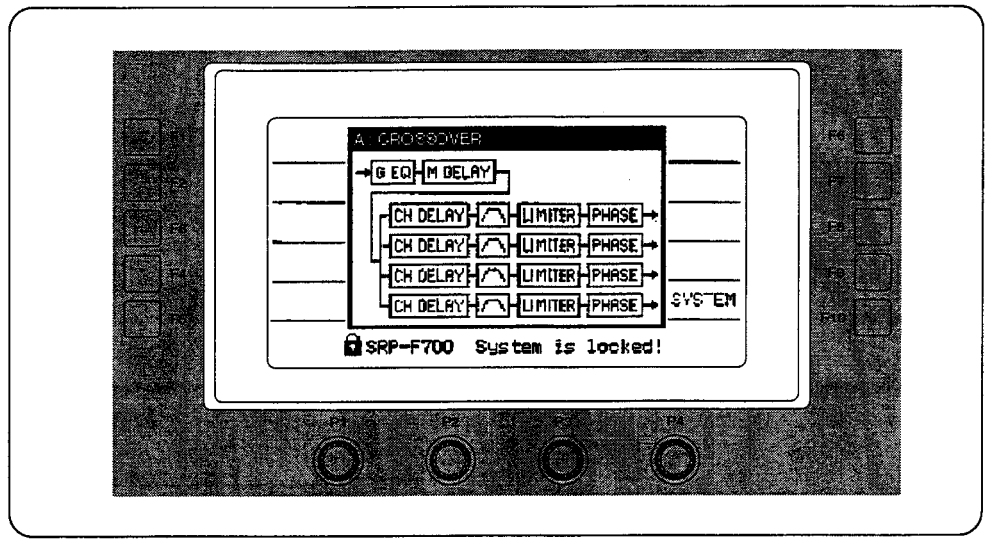


4 Enter a 4-digit figure using the P1 to P4 knobs.
After entering, define the code No. by pressing the EXEC (F6) key.



When the LOCK WITH CODE No. function is set, the lock can not be unlocked if the code No. has been forgotten. Be sure to remember the code No. before pressing the YES (F6) key.

5 Confirm the code No. and press the YES (F6) key.



The SRP-F700 is locked and the main menu is returned.

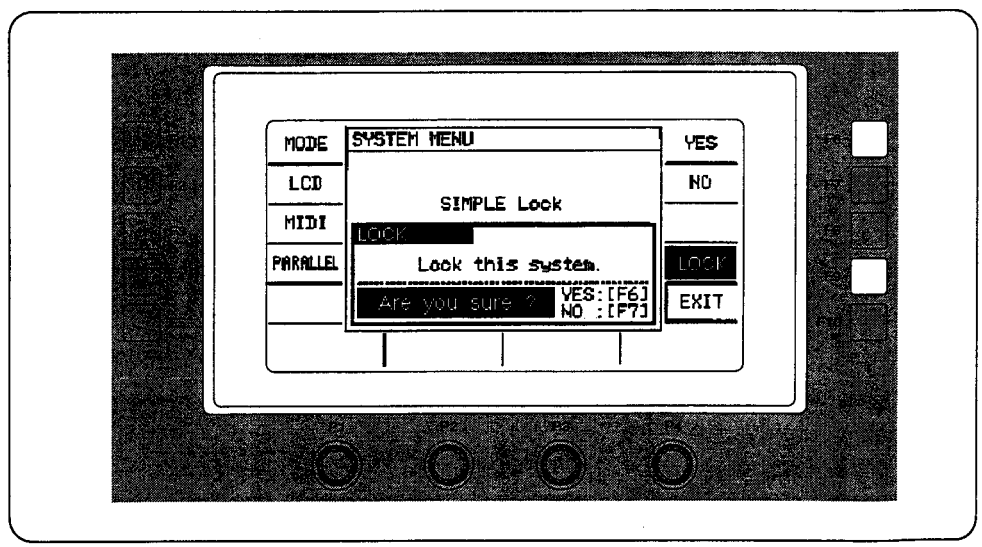
Setting the SIMPLE LOCK function

1 Display the system menu (F10) from the main menu.

2 Press the LOCK (F9) key to display the LOCK menu.

3 Press the SIMPLE (F6) key.

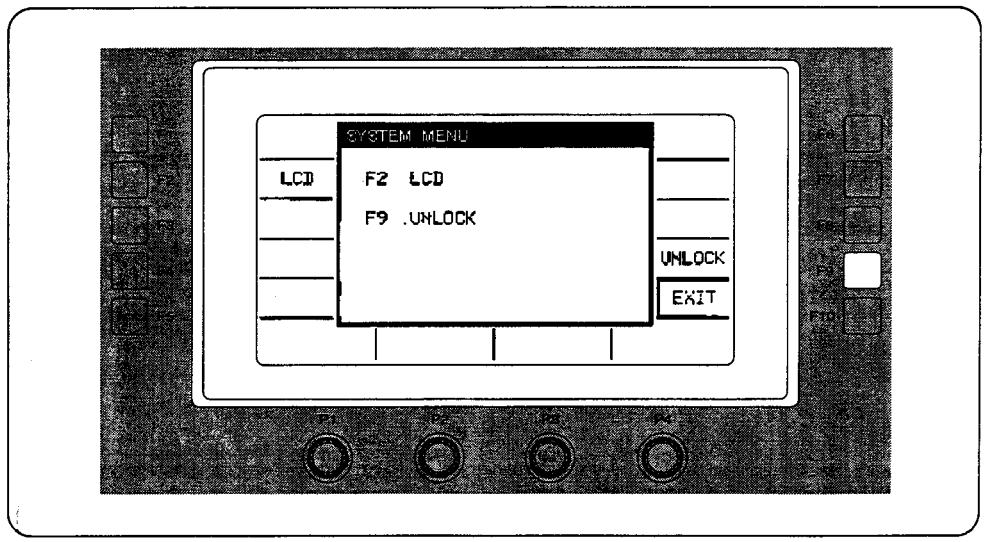
4 Press the YES (F6) key to lock.



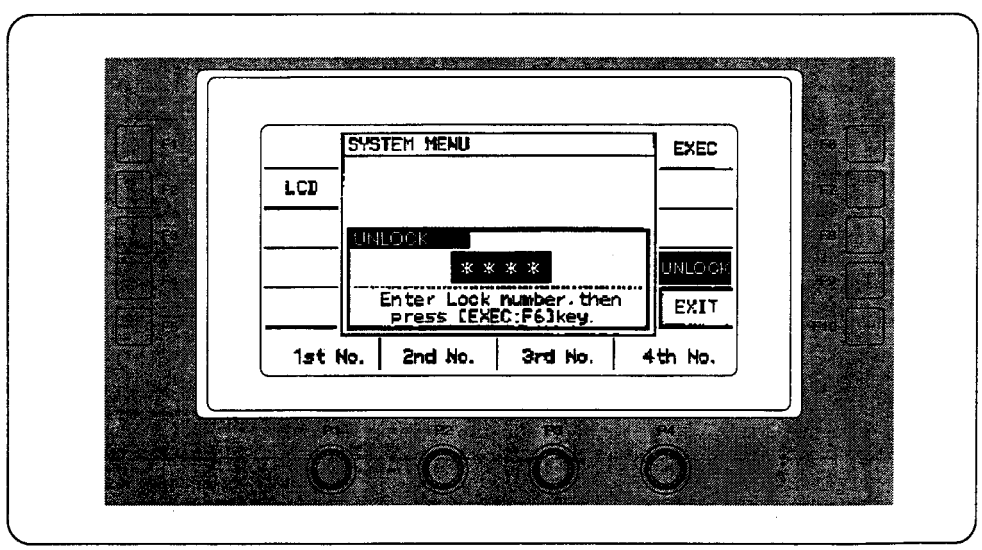
The SRP-F700 is locked and the main menu is returned.

Display the system menu from the main menu. (Only the system menu can be displayed at the main main screen.)

When locked with the LOCK WITH CODE No. function

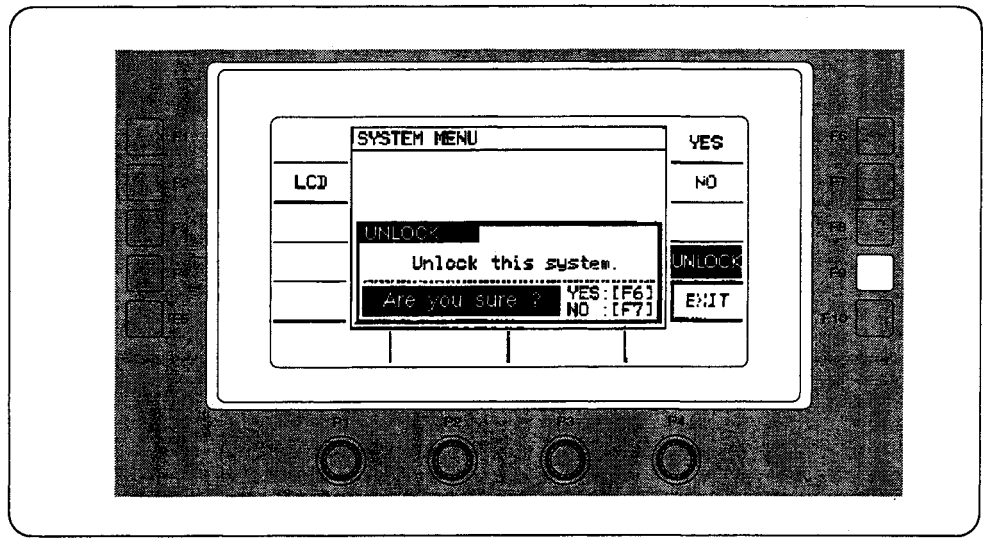


1 Press the UNLOCK (F9) key at the system menu to display the UNLOCK menu.



2 As a 4-digit code No. will be prompted automatically when the code No. is set, enter the 4-digit code No. and press the EXEC (F6) key.**3**

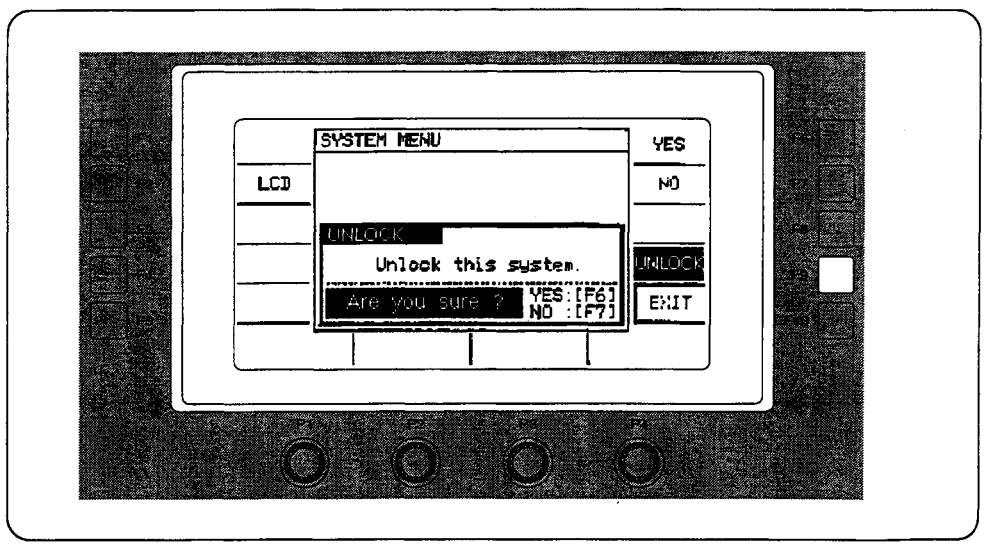
3 When the correct No. is entered, press the YES (F9) key to unlock.
The lock will be unlocked, and the main menu returned.



When the wrong No. is entered, the main menu will be returned without unlocking the lock.

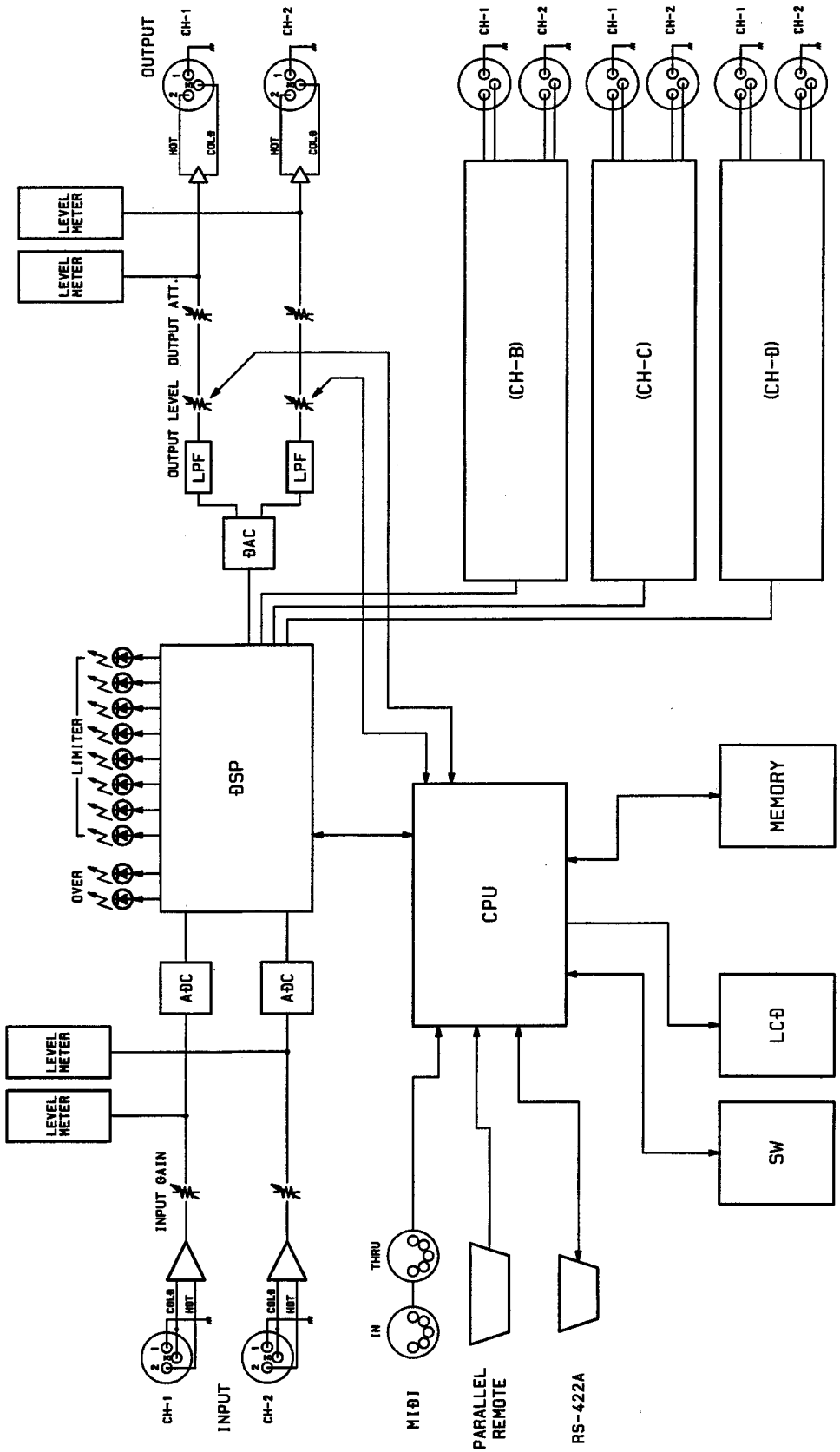
When locked with the SIMPLE LOCK function

1 Press the UNLOCK (F9) key at the system menu to display the UNLOCK menu.



2 Press the YES (F9) key to unlock.
The lock is unlocked, the main menu is returned.

6. BLOCK DIAGRAM



7. MAIN SPECIFICATIONS

Input/output interface

Input terminal	: XLR-3-31 equivalent × 2CH, Electronic balancer circuit (1:GND, 2:HOT, 3:COLD)
Input impedance	: Higher than 10 kΩ
Reference input level	: +4 dBS
Max. input level	: +24 dBS
Input gain adjustable range	: 0 to +15 dB (3 dB steps)
Output terminal	: XLR-3-32 equivalent × 8CH, Electronic balancer circuit (1:GND, 2:HOT, 3:COLD)
Output impedance	: Less than 100Ω
Adaptive load impedance	: Higher than 600Ω
Reference output level	: +4 dBS
Max. output level	: +24 dBS
Output attenuation adjustable range	: 0 to +15 dB (3 dB steps)
Output level adjustable range	: 0 to –20 dB (continuously variable)

Remote terminal

MIDI IN/THRU
PARALLEL REMOTE (D-sub 25P)
RS-422A (D-sub 9P) (optional)

Audio characteristic (through output)

Frequency characteristic	: 20 Hz to 20 kHz ±0.5 dB 10 Hz to 40 kHz +0.5%/–3 dB
Entire harmonic distortion	: Less than 0.05% (1 kHz, reference output level)
Dynamic range	: Higher than 96 dB (IHF-A, frequency band:less than 20 kHz)
Signal delay time (set at 0 sec)	: Approx. 460 µsec (modes A, B, C, E) : Approx. 3 msec (mode D)

Others

Power supply voltage	: AC 230 V
Power consumption	: 78 W
External dimensions	: 482 (W) × 132 (H) × 350 (D) mm (3U height type) (not including the maximum projection)
Weight:Approx.	: 12.5 kg

MIDI Implementation Chart Version:1.0

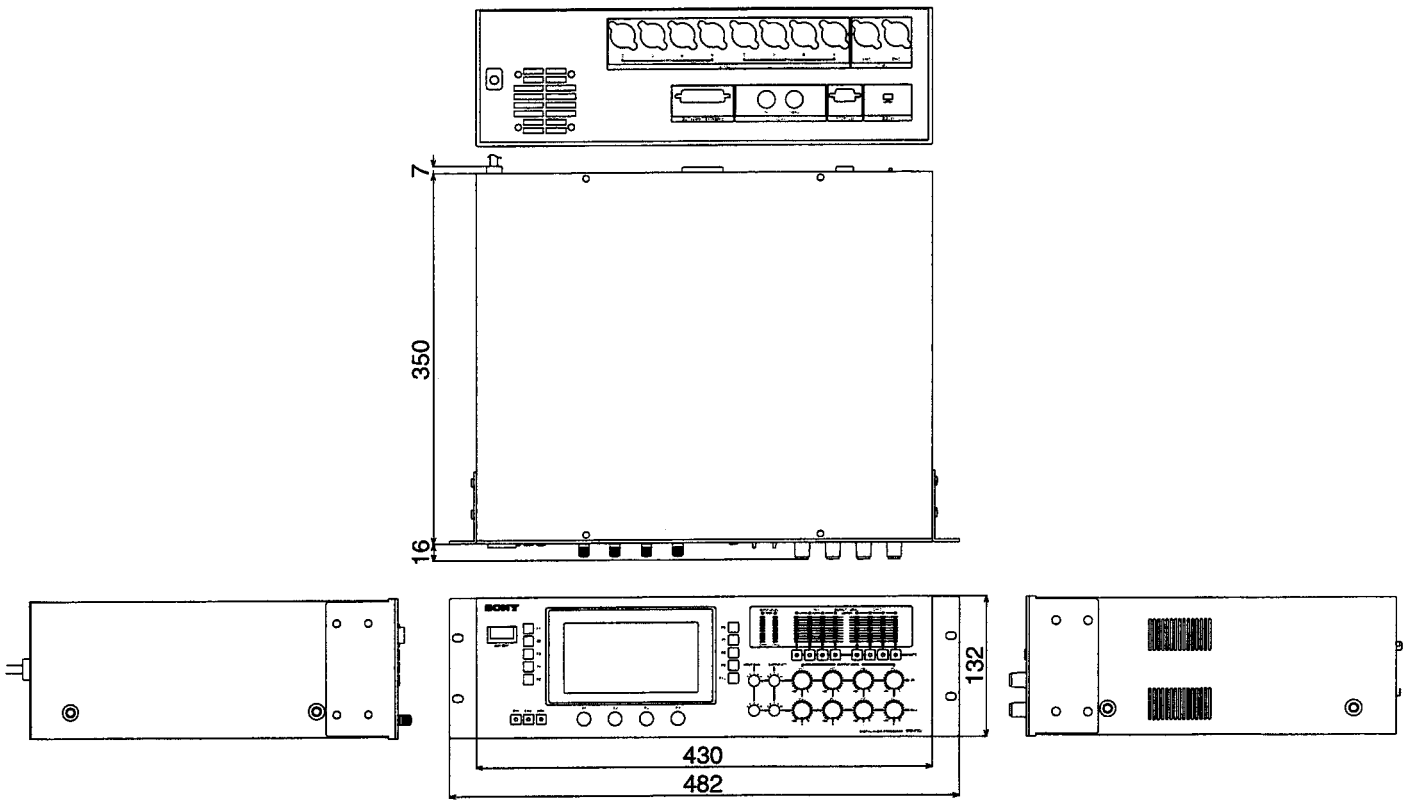
Function	Transmission	Reception	Remarks
Basic : Power ON Channel : Settable	× ×	1 to 16 1 to 16	Settings are maintained after the power OFF.
Mode : Power ON Message Alternative	× × **********	ON/OFF OMNI ON/OFF	Settings are maintained after the power OFF.
Note Number : Range	**********	×	
Velocity : Note ON : Note OFF	× ×	× ×	
After : Per keys Touch : Per channels	× ×	× ×	
Pitch bend	×	×	
Control change	×	○ : 7CH (OMNI OFF) 7DH (OMNI ON) × : Other than above	
Program Change : Settable range	× **********	○ : 0 to 127	The unit should be set in advance.
Exclusive	×	×	
Common : Song position : Song select : Tune	× × ×	× × ×	
Real : Clock Time : Command	× ×	× ×	
Others : Local ON/OFF : All note OFF : Active sensing : Reset	× × × ×	× × × ×	
Remarks	The MIDI OUT terminal is not equipped.		

Mode 1 : Omni ON Poly Mode 2 : Omni ON mono ○ : Equipped
Mode 3 : Omni OFF Poly Mode 4 : Omni OFF mono × : Not equipped

8. EXTERNAL DIMENSIONS

Mounting the unit on an EIA 19-inch standard rack

- When mounting several devices vertically, remove the legs of the base of the unit.
- If the rack mounting fixtures are not necessary, remove the fixtures by removing the side screws.



Unit : mm

Optional SRP-70BK (DSP extension board kit)

The SRP-70BK is a DSP expansion board kit for the SRP-F700 digital audio processor. The SRP-F700 digital audio processor uses, as standard, 20 high speed DSP ICs corresponding to 96 kHz sampling frequency. Mounting the SRP-70BK means adding

For details of the basic operations of the SRP-F700 not described in this manual, refer to the manual for the SRP-F700.

1-1. Expanded Functions

Mode B

Not provided as standard.
Available by mounting the SRP-70 BK.
The block configuration of mode B is the same as that of mode A.
However, the 121 band (1/12 oct steps) graphic equalizer block enables the frequency to be set more minutely.

Mode C

In the notch filter block, the number of settable notch filters will expand from the standard 12 bands to 31 bands.

Mode D

The crossover block using the linear phase FIR filter will change from the standard 2 WAY specifications to 4 WAY specifications.

1-2. Changes in Modes Upon Mounting the SRP-70BK

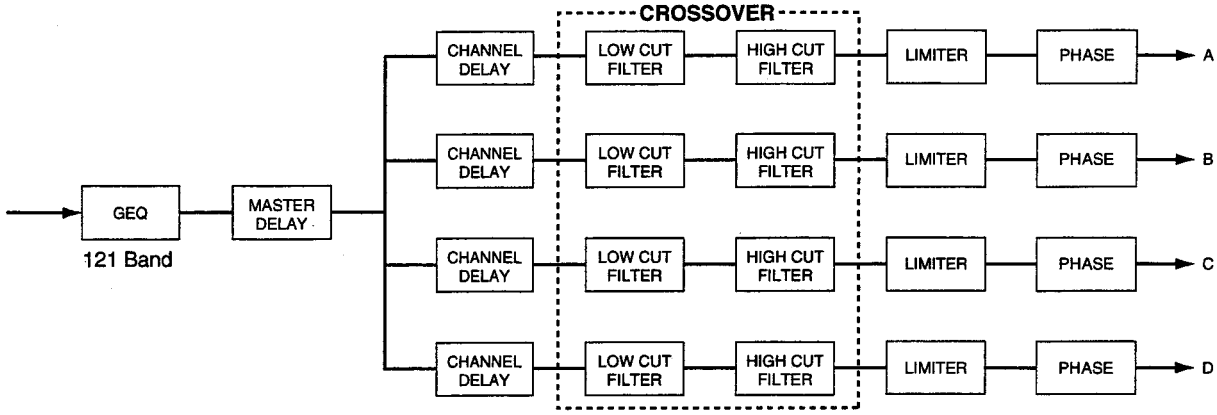
Upon mounting the SRP-70BK to the SRP-F700, the modes of the SRP-F700 will change as follows.

Crossover mode	Mode A	Same as before mounting.
.....	Mode B	Available on mounting.
.....	Mode C	Some functions are expanded on mounting.
.....	Mode D	Some functions are expanded on mounting.
Distribution mode...	Mode E	Same as before mounting.

2. Algorithm of Modes B, C, D Expanded by SRP-70BK

2-1. MODE B

The block configuration is the same as mode A, but the graphic equalizer (GEQ) block is 121 band (1/12 oct steps).
The other blocks are the same as mode A.

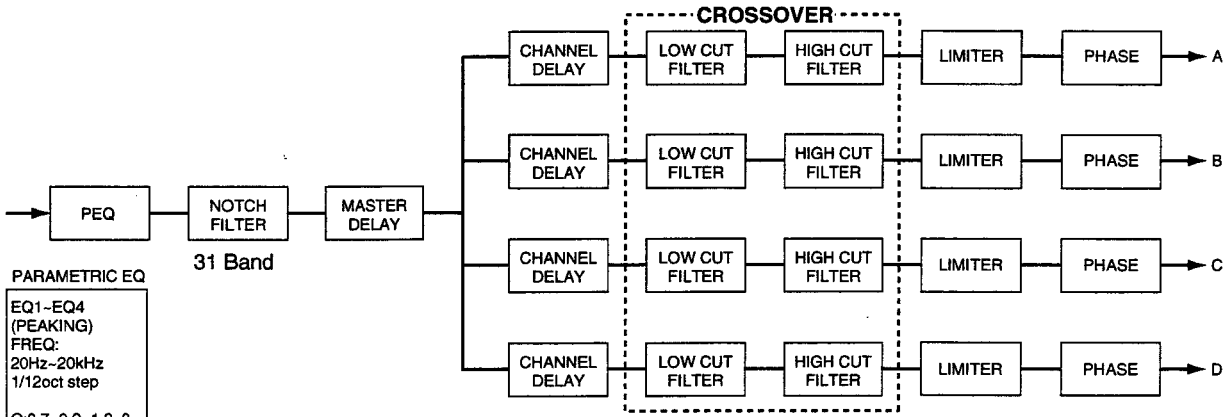


GRAPHIC EQ	MASTER DELAY	CHANNEL DELAY	CROSSOVER: LOW CUT FILTER	CROSSOVER: HIGH CUT FILTER	LIMITER	PHASE
FREQ: 20Hz~20kHz 31 Band (1/3 oct) Q:3, 4.5, 7 LEVEL: ±12 dB (0.5 step)	DELAY TIME: 0~1000msec 1msec step	DELAY TIME: 0~30msec 10.4µsec step	FREQ: OFF, 20Hz~18kHz 1/6oct step TYPE: Butterworth –12dB/oct –18dB/oct –24dB/oct Bessel –12dB/oct –18dB/oct –24dB/oct Linkwitz-Riley –12dB/oct –24dB/oct	FREQ: 22.4Hz~20kHz, OFF 1/6oct step TYPE: Butterworth –12dB/oct –18dB/oct –24dB/oct Bessel –12dB/oct –18dB/oct –24dB/oct Linkwitz-Riley –12dB/oct –24dB/oct	ATTACK: 0.5, 1, 2.5, 10, 20, 50, 100, 200 msec THRESHOLD: +24~–6dB 2dB step RATIO: 2:1, 4:1, 10:1, :1 RELEASE: 100~1000msec 100msec step	NORMAL/REVERSE

2-2. MODE C

In the notch filter block, the number of settable notch filters will expand from the standard 12 bands to 31 bands.

The other blocks are the same as the standard mode C.



PARAMETRIC EQ

EQ1~EQ4
(PEAKING)
FREQ:
20Hz~20kHz
1/12oct step

Q:0.7, 0.9, 1.2, 3, 4.5, 7

LEVEL:
0~±12dB
0.5dB step

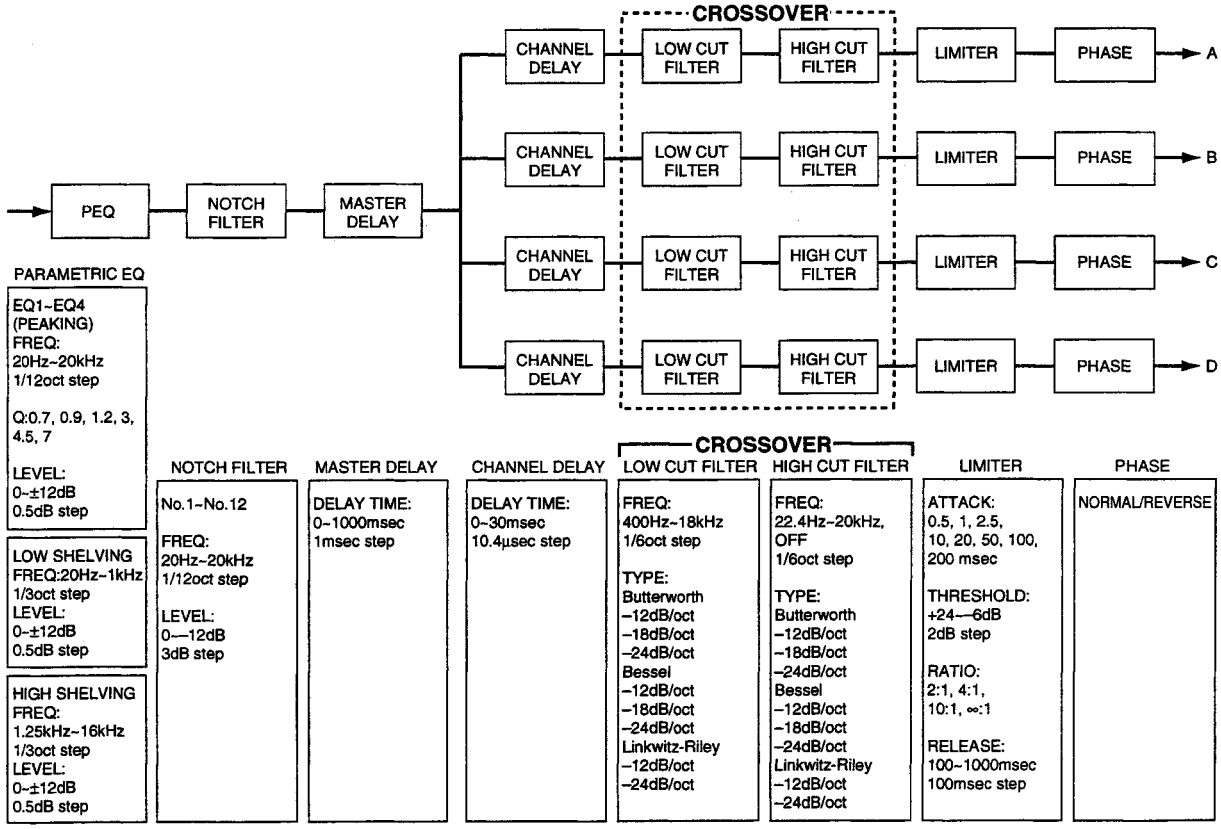
LOW SHELVING
FREQ:20Hz~1kHz
1/3oct step
LEVEL:
0~±12dB
0.5dB step

HIGH SHELVING
FREQ:
1.25kHz~16kHz
1/3oct step
LEVEL:
0~±12dB
0.5dB step

NOTCH FILTER	MASTER DELAY	CHANNEL DELAY	CROSSOVER		LIMITER	PHASE
			LOW CUT FILTER	HIGH CUT FILTER		
No.1~No.12 FREQ: 20Hz~20kHz 1/12oct step LEVEL: 0—12dB 3dB step	DELAY TIME: 0~1000msec 1msec step	DELAY TIME: 0~30msec 10.4μsec step	FREQ: 400Hz~18kHz 1/6oct step TYPE: Butterworth –12dB/oct –18dB/oct –24dB/oct Bessel –12dB/oct –18dB/oct –24dB/oct Linkwitz-Riley –12dB/oct –24dB/oct	FREQ: 22.4Hz~20kHz, OFF 1/6oct step TYPE: Butterworth –12dB/oct –18dB/oct –24dB/oct Bessel –12dB/oct –18dB/oct –24dB/oct Linkwitz-Riley –12dB/oct –24dB/oct	ATTACK: 0.5, 1, 2.5, 10, 20, 50, 100, 200 msec THRESHOLD: +24—6dB 2dB step RATIO: 2:1, 4:1, 10:1, ∞:1 RELEASE: 100~1000msec 100msec step	NORMAL/REVERSE

2-3. MODE D

The crossover block using the linear phase FIR filter will change from the standard 2 WAY specifications to 4 WAY specifications.
The other blocks are the same as the standard specifications.



3. Selecting the Mode

As Mode B is a crossover mode, to set it, select the crossover mode using the corresponding switch on the rear panel, turn ON the power, and then select it at the SYSTEM menu in the same way as Modes A, C, and D.

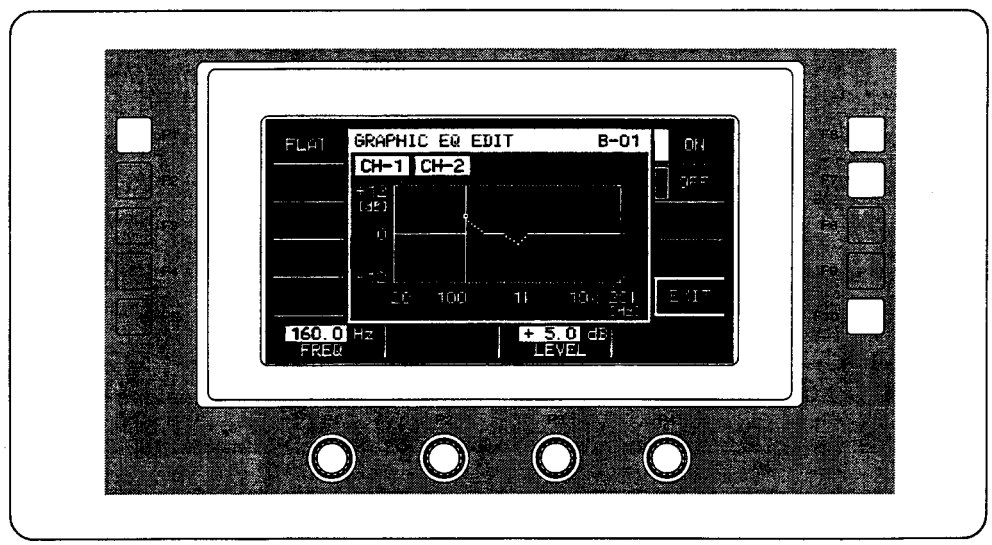
4. Operating Menu

4-1. Mode B Graphic Equalizer (GEQ) Setting Menu

Set the 1/12 oct steps, 121-band graphic equalizer.
The Q of each band is fixed.

Functions of Parameter Knobs

FREQ (P1) : Selects the frequency20 Hz to 20 kHz 1/12 oct steps, 121 bands
LEVEL (P2) : Sets the level, ±12 dB, 0.5 dB steps



- Rotate FREQ (P1) and set the desired frequency.
  The selected frequency will be displayed as a vertical line on the graph in the middle of the parameter function display area.
- Set the frequency selected with FREQ (P1) using LEVEL (P3).

Functions of Other Keys

FLAT (F1)
Pressing the FLAT key continuously for more than 2 seconds will set all bands back to 0 dB.
ON/OFF (F6/F7)
Used to turn ON/OFF the GEQ function.
When ON (F6) is pressed, the GEQ function set starts operating. When OFF (F7) is pressed, the signal will pass through this block without the GEQ operating. Even if the OFF key is pressed, parameter settings will remain displayed, enabling
EXIT (F10)
Pressing the EXIT key will return the main menu from the GEQ setting menu.

4-2. Mode C Notch Filter Setting Menu

Despite the increase in the number of bands that can be set, operations remain the same as the standard notch filter.

FILTER No. (P1):UP to filter No. 31 can be selected.

Refer to page 24 in the SRP-F700 Instruction Manual.

4-3. Mode D Crossover Setting Menu

The crossover block of mode D will be 4 WAY specifications instead of the 2 WAY specifications in standard use.

The method of setting the mode D crossover when the SRP-70BK is mounted is basically the same as that of the crossover of modes A, B, and C. Except for the following operations, operate as described in Crossover Setting Menu (Modes A, B, C)

Features of Mode D Crossover When SRP-70BK is Mounted

In mode D, when the cutoff frequency of the filter is above 400 Hz, the linear phase FIR filter is used.

When below 355 Hz, the same IIR filter as modes A, B, and C is used. This means that the filter selected changes according to whether the frequency of the filter set is above 400 Hz or below as follows.

When above 400 Hz:

The linear phase FIR filter is used, whose amplitude characteristics are the same as the Linkwitz-Riley.

Two types of attenuation characteristics can be selected –12 dB/oct and –24 dB/oct.

(LINKWZ12) –12 dB/oct attenuation characteristics

(LINKWZ24) –24 dB/oct attenuation characteristics

When below 355 Hz:

Same as the crossover of the IIR filters of modes A, B, and C.

The following eight types can be selected.

(BUTWTH12) Butterworth –12 dB/oct

(BUTWTH18) Butterworth –18 dB/oct

(BUTWTH24) Butterworth –24 dB/oct

(BESSEL12) Bessel –12 dB/oct

(BESSEL18) Bessel –18 dB/oct

(BESSEL24) Bessel –24 dB/oct

(LINKWZ12) Linkwitz-Riley –12 dB/oct

(LINKWZ24) Linkwitz-Riley –24 dB/oct

Delay of Signals in Mode D Crossover When SRP-70BK is Mounted

Generally, a FIR filter requires more signal processing taps if a filter with the lower frequency is used. Consequently, this means the greater the delay of the signal. In the mode D crossover block, the delay of other bands will also be af

In the case of the mode D of the SRP-F700, a comparatively long signal delay occurs. To resolve this, the signal delay is set at approximately 6 msec by setting the frequency for using the FIR linear phase FIR filter above 400 Hz to avoid any adverse effects.

4-4. Specifications

Power supply	: Supplied from the SRP-F700 unit (DC5V)
External dimensions (per one extension board)	: 125 mm × 48 mm × 6 mm (thickness) × 2
Weight	: Approx. 20g × 2